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FLORA OF PERU

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BOTANICAL SERIES
FIELD MUSEUM OF NATURAL HISTORY
VOLUME XIII, PART V-A, NUMBER 1
JULY 31, 1962

PUBLICATION 953

Library of Congress Catalog Card Number: 36-10426

PRINTED IN THE UNITED STATES OF AMERICA
BY CHICAGO NATURAL HISTORY MUSEUM PRESS

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FLORA OF PERU

Mildred E. Mathias and Lincoln Constance[1]

UMBELLIFERAE. Carrot Family

References: O. Drude, Umbelliferae in Engl. & Prantl, Pflanzenf. 3 (8): 63–250. 1897. H. Wolff, Umbelliferae–Saniculoideae in Engl. Pflanzenr. 61 (IV. 228): 1–305. 1913. H. Wolff, Umbelliferae–Apioideae, 43 (IV. 228): 1–214. 1910. H. Wolff, Umbelliferae–Apiodeae, 90 (IV. 228): 1–398. 1927. Mathias & Constance, Umbelliferae, North American Flora 28B: 43–374. 1944–45.

Plants usually herbaceous, rarely woody at base, acaulescent or caulescent, annual or perennial, with commonly hollow stems. Leaves alternate, or rarely opposite, or basal, compound or sometimes simple, usually much incised or divided, with usually sheathing petioles. Flowers small, regular, in simple or compound umbels, or the umbels sometimes proliferous or capitate; rays sometimes subtended by bracts forming an involucre; umbellets usually subtended by bractlets forming an involucel. Calyx tube wholly adnate to ovary; calyx teeth obsolete or small. Petals 5, usually with an inflexed tip. Stamens 5, inserted on an epigynous disk. Ovary inferior, bilocular, with one anatropous ovule in each locule; styles 2, sometimes swollen at base, forming a stylopodium. Fruit consisting of 2 carpels united by their faces (commissure), flattened or compressed dorsally (parallel to commissure), laterally (at right angles to commissure), or terete, each carpel with 5 primary ribs, one dorsal, two lateral (on the edges of commissure) and two between dorsal and lateral ribs (intermediate ribs), and rarely with secondary ribs, the ribs filiform to broadly winged, thin or corky; vittae (oil tubes) obsolete or present in the intervals (spaces between ribs) and on commissural surface, rarely also in pericarp; carpels 1-seeded, splitting apart at maturity, usually suspended from summit of a slender prolongation of the axis (carpophore). Embryo small; endosperm cartilaginous.

Umbelliferae are widely distributed in temperate and mountainous areas of the world, especially in the northern hemisphere.

[1] The authors wish to acknowledge partial support from grant G-13393 by the National Science Foundation.

The family includes a number of common foods and condiments such as carrot, parsnip, celery, parsley, anise, caraway, dill, chervil, fennel, and lovage. Many of these have escaped from cultivation and have become weedy components of floras in various parts of the world. In Peru about 20 per cent or 17 species of the family are these escaped cultivars and other widespread weedy species. The incidence of endemism in Peruvian Umbelliferae is amazingly high, some 40 per cent of the species being known only from that country. Only five of the endemic species and varieties and only five widely ranging species are of northern-hemisphere affinity. The others belong mostly to Andean genera. Twenty-nine species extend outside of Peru and are referred to genera widely distributed in the southern hemisphere.

The high endemism may be in large part a reflection of our still inadequate knowledge of the flora, many of the species being known from single collections. Range extensions are common and the discovery of new species frequent as a new area or a new collection is studied. Certainly the umbelliferous flora of Peru is still poorly known and comprehensive collections will continue to improve our knowledge. It is hoped that this preliminary revision of the family will encourage collectors and Peruvian students of the family.

Umbels all simple, lax and open to capitate, variously arranged.
- Cushion plants of high altitudes.
  - Umbels capitate; flowers sessile; fruit scaly..... *Eryngium.*
  - Umbels lax; flowers pedicellate; fruit glabrous or pubescent.
    - Fruit with distinct vittae in the intervals but without a woody endocarp; carpophore present; leaves pinnatisect. *Oreomyrrhis.*
    - Fruit lacking vittae in the intervals but with a prominent woody endocarp; carpophore lacking; leaves not pinnatisect..... *Azorella.*
- Erect, ascending, or creeping perennials, biennials or annuals, not conspicuously cespitose or matted to form cushions.
  - Umbels capitate (flowers stipitate in *Sanicula*); fruit prominently scaly or uncinate-prickly (Saniculoideae).
    - Fruit variously covered with scales or tubercles; flowers all perfect and sessile; leaves neither palmately lobed nor parted..... *Eryngium.*

Fruit uncinate-prickly; flowers either perfect or staminate in the same umbellet, at least the latter stipitate; leaves palmately 3–5-parted.....*Sanicula.*

Umbels lax; fruit glabrous, pubescent or glochidiate.

Foliage of septate linear phyllodes; fruit with prominent aeriform tissue.....*Lilaeopsis.*

Foliage various, but always with an evident leaf blade; fruit lacking prominent aeriform tissue.

Stipules or stipular processes evident at base of petiole.

Foliage and inflorescence stellate-pubescent or stellate-glochidiate.....*Bowlesia.*

Foliage and inflorescence glabrous or pubescent, but neither stellate-pubescent nor stellate-glochidiate.

Erect annuals; cauline leaves opposite.....*Spananthe.*

Creeping perennials; leaves basal or alternate.
Hydrocotyle.

Stipules lacking, the petioles sheathing at base.

Plants prominently caulescent, glabrous and glaucous; petals with a prominent gland; involucral bracts free or largely so; carpophore lacking.

Annuals; petal apex merely acute, not prominently inflexed; stylopodium obsolete.....*Domeykoa.*

Perennials; petal apex long-inflexed; stylopodium evident.....*Eremocharis.*

Plants acaulescent or subcaulescent with no or few cauline leaves; petals glandless; involucral bracts connate below; carpophore present.....*Oreomyrrhis.*

Umbels regularly compound (or some umbels, especially the lateral, occasionally simple).

Fruit armed with bristles, prickles, or glochids (see also *Sanicula*).

Fruits caudate at base, several times longer than broad; leaflets ovate, 15–40 mm. long.....*Osmorhiza.*

Fruits rounded or truncate, neither caudate at base nor more than 2–3 times as long as broad; leaflets filiform to lanceolate, 2–12 mm. long.

Involucral bracts prominent, dissected; rays prominent; carpels flattened dorsally; leaflets linear to lanceolate.
Daucus.

Involucral bracts entire or lacking; rays abortive; carpels flattened laterally; leaflets filiform..... *Torilis.*

Fruits unarmed, glabrous or pubescent.

Flowers yellow, greenish-yellow, maroon, deep red or purple, but never white.

Leaves decompound with filiform ultimate divisions.

Perennial or biennial; petals obtuse, rounded at apex; carpophore divided to base; petioles wholly sheathing. *Foeniculum.*

Annual; petals shallowly emarginate; carpophore merely bifid; petioles sheathing only below..... *Ridolfia.*

Leaves variously divided but with mostly oblong or lanceolate to orbicular leaflets.

Perennial; involucel longer than flowers and sometimes longer than fruit.

Fruit ellipsoid-cordate; involucel of conspicuous filiform bractlets to 3 cm. long, exceeding mature fruit. *Neonelsonia.*

Fruit oblong to ovoid; involucel of linear to obovate bractlets to 1.5 cm. long, shorter than fruit. *Arracacia.*

Annual or biennial; involucel lacking or shorter than flowers.

Leaves ternate-pinnately or pinnately decompound, the leaflets linear; fruit 2–4 mm. long, compressed laterally, all ribs filiform; involucel present. *Petroselinum.*

Leaves pinnately compound, the leaflets oblong to ovate, to 8 cm. broad; fruit 5–6 mm. long, flattened dorsally, the lateral ribs winged; involucel lacking. *Pastinaca.*

Flowers white, or sometimes greenish or rosy or with a colored midvein.

Petals unequal, the marginal petals radiant; ripe carpels coherent, not separating readily..... *Coriandrum.*

Petals subequal; ripe carpels separating from carpophore.

Rays and pedicels borne on discoid receptacles, rigidly contracted in fruit..... *Ammi.*

Neither rays nor pedicels borne on discoid receptacles and not contracted in fruit.

Both involucre and involucel lacking; umbels all sessile or short-pedunculate.....*Apium.*

Involucel, and often also an involucre, present; umbels (at least the terminal) prominently pedunculate.

Stout introduced weedy annuals with purple-spotted stems; fruit ribs prominently undulate-winged. *Conium.*

Native perennials, without conspicuously spotted stems; fruit ribs normally unwinged and plane.

Carpels compressed dorsally; involucel bractlets shorter than pedicels.....*Paraselinum.*

Carpels compressed laterally, or terete; involucel bractlets longer than pedicels, sometimes slightly exceeding flowers and fruit.

Petals purple, maroon, or greenish (rarely whitish), with a conspicuously narrower inflexed apex; styles slender; seed face sulcate...*Arracacia.*

Petals white (often with a colored midvein), obtuse or acute, but without a prominent inflexed apex; styles short; seed face shallowly concave.....*Niphogeton.*

AMMI L.

Slender, erect, herbaceous, caulescent, branching, essentially glabrous annuals, biennials, or perennials, from slender taproots. Leaves petiolate, membranaceous, ternate-pinnately or pinnately dissected, the leaflets filiform to lanceolate. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and axillary. Involucre of numerous entire or divided bracts. Rays numerous, spreading-ascending. Involucel of numerous entire bractlets shorter or longer than pedicels. Pedicels spreading. Flowers white; petals ovate to obovate with a broad, shallowly bilobed, inflexed apex; calyx teeth minute; styles slender, more than twice as long as the depressed-conic stylopodium. Carpophore entire or 2-parted to base, flat. Fruit oblong to ovoid, compressed laterally, glabrous; ribs acute; vittae solitary in the intervals, 2 on commissure; seed subterete in transection, the face plane.

A Mediterranean genus. Two species have been cultivated as ornamentals and for medicinal purposes. Both have been sporadically introduced in the western hemisphere but only one is reported from Peru.

Ammi visnaga (L.) Lam. Fl. Fr. 3: 462. 1778. *Daucus visnaga* L. Sp. Pl. 242. 1753. *Apium visnaga* Crantz, Class. Umbell. 104. 1767. *Selinum visnaga* Krause in Sturm, Fl. Deutsch. ed. 2. 12: 44. 1904. *Carum visnaga* K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 198. 1916.

Erect biennial, 2–8 dm. tall; leaves deltoid, the blades 5–20 cm. long, pinnately decompound, the ultimate divisions linear to filiform, setaceous to cuspidate-acute, divaricate, entire, 5–35 mm. long, 0.5–1 mm. broad; petioles about 10 cm. long; cauline leaves ternately or pinnately dissected; peduncles 8–14 cm. long; involucral bracts equaling or exceeding rays; rays 60–100, subfiliform, unequal, 2–5 cm. long, spreading in flower but rigidly contracted in fruit, borne on a discoid receptacle; involucel of numerous setiform-acute, entire bractlets, ascending at maturity and equaling or exceeding pedicels; pedicels numerous, filiform, unequal, 3–13 mm. long, spreading in flower but rigidly contracted in fruit, borne on a small discoid receptacle; carpophore entire; fruit oblong-ovoid to ovoid, 2–2.5 mm. long, 1.5–1.7 mm. broad.

Arequipa: Pr. Islay: Lomas de Mollendo, 400 m., *Angulo & Sagástegui 2589;* lower edge of loma zone, foot of hills east of Mollendo, 50 m., *West 8205.*—Cajamarca: Pr. Chota: cerca a Llama, 2000 m., *Ferreyra 8401.* Pr. Cajamarca: alrededores de la ciudad, terreno húmedo, *Ridoutt 316.*—La Libertad: Pr. Santiago de Chuco: Andamarca, *Paredes 1587.* Pr. Huamachuco: Hda. Yanazara, en borde de camino, 2650 m., *López & Sagástegui 2857.*—Lima: Pr. Lima: between Lima and Vitarte, edge of field, *Asplund 13906;* repartición near Lima, *Hood.*—Moquegua: Pr. Mariscal Nieto: Valle de Ilo, desembocadura del Río Ilo, 10–20 m., *Ferreyra 11629.*

Known locally as *bisnaga, cicuta,* and *culantro de burro.* Eurasia, sporadically introduced, Pennsylvania to Florida, Oregon to California, Oaxaca, Bermuda, temperate South America.

APIUM L.

Celeri Adans. Fam. Pl. 2: 498. 1763. *Helosciadium* Koch, Nova Acta Acad. Leop.-Carol. 12: 125. 1825. *Ciclospermum* Lag. Amen. Nat. 101. 1821.

Slender or stout, erect, ascending, or prostrate, herbaceous or somewhat woody at base, caulescent (in our species), usually branching, glabrous annuals, biennials or perennials, from taproots or creeping rootstocks, rooting at nodes. Leaves petiolate, membranaceous, simply pinnate to ternate-pinnately decompound, the leaflets suborbicular to filiform. Petioles sheathing. Inflorescence of loose to subcompact, compound or rarely simple umbels. Peduncles lateral and terminal, or some or all of the umbels sessile. Involucre wanting to conspicuous. Rays usually rather few, spreading-ascending. Involucel wanting to conspicuous. Pedicels spreading or ascending. Flowers white or greenish; petals ovate to suborbicular, acute, plane, or the apex somewhat inflexed; calyx teeth minute or obsolete; styles short, spreading or divaricate, the stylopodium short-conic to depressed. Carpophore entire or shortly bifid. Fruit oblong-oval to orbicular or ellipsoid, compressed laterally and somewhat constricted at commissure, glabrous or rarely somewhat setulose; ribs filiform, subequal, obtuse, prominent; vittae solitary in the intervals, 2 on commissure; seed subterete in transection, the face plane.

A genus of some 30 species, principally of Eurasia and the southern hemisphere.

Plants perennial; leaves pinnate, the leaflets ovate to suborbicular. *A. graveolens.*

Plants annual; leaves pinnately decompound, the leaflets linear to filiform.

Leaflets filiform, several times longer than broad; fertile flowers mostly more than ten in each umbellet. . . . . *A. leptophyllum.*

Leaflets linear, not several times longer than broad; fertile flowers mostly fewer than ten in each umbellet. . . . . *A. laciniatum.*

Apium graveolens L. Sp. Pl. 264. 1753. *Seseli graveolens* Scop. Fl. Carn. ed. 2. 1: 215. 1772. *Sium apium* Roth, Fl. Germ. 1: 128. 1788. *S. graveolens* Vest, Man. Bot. 517. 1805. *Apium vulgare* Bubani, Fl. Pyren. 2: 344. 1900. *Selinum graveolens* Krause in Sturm, Fl. Deutsch. ed. 2. 12: 38. 1904. *Celeri graveolens* Britt. in Britt. & Brown, Ill. Fl. ed. 2. 2: 660. 1913. *Carum graveolens* K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 199. 1916.

Plants perennial, the stems erect or ascending, about 5–15 dm. high, from a taproot; leaves oblong to obovate, the blades 7–18 cm. long, 2–5 cm. broad, pinnate with few pairs of ovate to suborbicular

leaflets, 2–4.5 cm. long, 2–5 cm. broad, usually 3-lobed to near middle; petioles 3–26 cm. long; cauline leaves frequently cuneate, sometimes laciniate; umbels sessile or short-pedunculate, the peduncles up to 1.2 cm. long; involucre wanting; rays 7–16, 0.7–2.5 cm. long; involucel wanting; pedicels 1–6 mm. long; calyx teeth minute but evident; carpophore shortly bifid; fruit suborbicular to ellipsoid, about 1.5 mm. long, 1.5–2 mm. broad.

Illustrations: Bot. Jahrb. 28: *pl. 2, fig. 30.* 1899 (fruit section).

Arequipa: Pr. Arequipa: alrededores de los Baños de Jesus, cerca a Arequipa, 2400–2500 m., *Ferreyra 12071.*—Lima: Pr. Lima: cercanías de Lima, *Isern 45* (*Cuatrecasas 2466*); Callao, mouth of Río Rimac, *Soukup 2136;* Hacienda Balconcillo, 157 m., *Ridoutt.*

The cultivated celery, locally known as *apio.* Europe, adventive throughout the western hemisphere.

Apium laciniatum (DC.) Urb. in Mart. Fl. Bras. 11 (1): 343. 1879. *Helosciadium laciniatum* DC. Mém. Soc. Phys. Génève 4: 495. 1829. *Sison laciniatum* l'Her. ex DC. l.c. in synon. *Helosciadium laciniatum* var. *humile* Hook. & Arn. Bot. Misc. 3: 353. 1833. *H. laciniatum* var. *elatius* Hook. & Arn. l.c. *H. gracile* Clos ex Gay, Fl. Chile 3: 124, *pl. 31, f. 2.* 1847 (including varieties α and β). *H. desertícola* Phil. Fl. Atacam. 26. 1860. *H. biternatum* Phil. Anal. Univ. Chile 85. 718. 1894. *Apium biternatum* Reiche, Anal. Univ. Chile 104: 836. 1899; Fl. Chile 3: 115. 1902. *A. laciniatum* var. *gracile* Reiche, Anal. Univ. Chile 104: 835. 1899; Fl. Chile 3: 114. 1902. *A. laciniatum* var. *gracile* f. *deserticolum* Wolff, in Engl. Pflanzenr. 90 (IV. 228): 56. 1927. *A. laciniatum* var. *gracile* f. *elatius* Wolff, l.c. *A. laciniatum* var. *hispidulum* Wolff, l.c.

Plants slender, annual, branching above, 1.5–2 dm. high; leaves oblong-ovate, the blades 0.5–3 cm. long, 0.5–3 cm. broad, ternate, then 1–2-pinnate, the segments linear, up to 4 mm. long, about 1 mm. broad, entire to incised-lobed; petioles to 3.5 cm. long, the sheath conspicuously white-scarious-margined; cauline leaves similar; umbels axillary, sessile, 2–3-rayed, the rays unequal, to 10 mm. long; involucre and involucel wanting; fruiting pedicels less than 10, unequal, to 4 mm. long; flowers greenish to pinkish-white; calyx teeth inconspicuous; carpophore entire; fruit ovoid, 1.5–2 mm. long, 1–2 mm. broad, glabrous, to rugulose or hispidulous.—F.M. Negs. 8859, 31809.

Illustrations: Gay, Hist. Chile, Atlas, *pl. 31, f. 1.* 1847 (as *Helosciadium gracile*).

Ancash: Pr. Casma: lomas de Lupín entre Huacho y Casma, loma arcillosa, 540 m., *Ferreyra 8673; Mathias 3672.*—Arequipa: Pr. Islay: Lomas de Mollendo, 500–600 m., *Ferreyra 12615;* near Mollendo, 250 m., *Hutchison 1861.* Pr. Caravelí: Lomas de Pongo (Acarí), 750 m., *Velarde 1461;* Lomas de Capace, km. 648 from Lima, ca. 2 km. south of Chala, 200 m., *Hutchison 1290.*—La Libertad: Pr. Trujillo: Cerro Cabezón, loma arenosa, 500 m., *Angulo 1192;* alrededores de Ascope, 120 m., en borde de acequia, *López 188.*—Lima: Pr. Lima: Lomas de Quilmana, al sur de Lima, 480 m., *Ferreyra 3990;* Miraflores, cerca a Lima, 157 m., *Maisch;* Lima, terrenos de cultivo, *Cali;* Lomas de Amancaës, cerca a Lima, 400 m., *Ferreyra 11828;* Lomas de Caracoles, entre Lima y Cañete, 200–300 m., *Ferreyra 11875;* San Gerónimo, about 500 ft., rocky hillside, *Macbride 5911;* vicinity of Lima, San Agustín, *Asplund 13832.* Pr. Chancay: 5 km. north of Barranca, *Stork, Beetle & Morrison 9094;* Lomas de Lachay, cerca a Chancay, 300–400 m., *Cerrate 859;* Lomas de Pacar (Pativilca), 400 m., *Velarde 2309;* Lomas de Chancay, arcilloso-pedregoso, 300 m., *Ferreyra 8737.* Pr. Cañete: hills of Perico near Mala, rocky places, 12–20 m., *Vargas 9316.*—Moquegua: Pr. Mariscal Nieto: Lomas de Ilo, 250–350 m., *Ferreyra 11604.*—Tacna: Pr. Tacna: Lomas de Morro Sama, 600–700 m., *Ferreyra 12646.*—Without locality, *Dombey.*

Frequent in rocky places in loma vegetation to Chile. Occasionally a garden weed known as *capuchilla.*

Apium leptophyllum (Pers.) F. Muell.; Benth. & Muell. Fl. Austr. 3: 372. 1866. *Sison ammi* L. sensu Jacq. Hort. Vindob. 2: 95. 1773, not *S. ammi* L. 1753. *Sium nodiflorum* Walt. Fl. Car. 115. 1788, not *S. nodiflorum* L. 1753. *Seseli ammi* Savi, Due Cent. 71. 1804. *Pimpinella leptophylla* Pers. Syn. Pl. 1: 324. 1805. *Aethusa leptophylla* Spreng. Umbell. Prodr. 22. 1813. *Pimpinella domingensis* Willd. ex Spreng. in Roem. & Schult. Syst. Veg. 6: 411. 1820, as synon. *Ciclospermum ammi* Lag. Amen. Nat. 2: 101. 1821. *Helosciadium leptophyllum* DC. Mém. Soc. Phys. Génève 4: 493. 1829. *Apium ammi* Urban, in Mart. Fl. Bras. 11 (1): 341. 1879. *A. leptophyllon* Maza, Noc. Bot. Sist. 74: 1893. *A. ammi* var. *leptophyllum* Kuntze, Rev. Gen. 3 (2): 111. 1898. *Selinum leptophyllum* Krause in Sturm, Fl. Deutsch. ed. 2. 12: 28. 1904. *Helosciadium ammi* Britt. Fl. Bermuda 279. 1918. *Cyclospermum leptophyllum* Sprague, Jour. Bot. 61: 131. 1923. *Apium ammi* var. *genuinum* Wolff, in Engl. Pflanzenr. 90 (IV. 228): 54. 1927. *Apium depressum* Jones, Contr. W. Bot. 18: 63. 1933.

Plants annual, alternately branching above, 0.5–6 dm. high; leaves oblong-ovate, the blades 3.5–10 cm. long, 3.5–8 cm. broad, 3–4-pinnately decompound, the leaflets linear to filiform, 1.5–7 mm. long, 0.5–1 mm. broad; petioles 2.5–11 cm. long, the sheath white-scarious-margined; cauline leaves ternate-pinnately decompound, the leaflets filiform, 4–35 mm. long; umbels compound, sessile, the rays to 2 cm. long; involucre and involucel wanting; pedicels 15–20, 2–8 mm. long; calyx teeth inconspicuous; carpophore entire or very shortly bifid; fruit ovoid, 1.2–3 mm. long, 1.5–2 mm. broad.

Illustrations: Jacq. Hort. Vindob. 2: *pl. 200.* 1773. Mart. Fl. Bras. 11 (1): *pl. 91.* 1879. Urban, Bot. Jahrb. 28: *pl. 2, f. 35.* 1899 (fruit). Urban & Wolff, Ark. Bot. 22A (10): *pl. 1.* 1929.

Amazonas: Pr. Chachapoyas: Hacienda Shañi, *Cevasco.*—Ancash: Pr. Bolognesi: Quero al este de Huasta, monte rigido, 3800 m., *Cerrate 2518.*—Ayacucho: Pr. Andahuaylos: above Chincheros, km. 203 north of Abancay, 3600 m., *Hutchison 1716.*—Cajamarca: Pr. Hualgayoc: Mont. Nancho, 7700 ft., *Raimondi.*—Cusco: Pr. Cusco: Laguna Huaypo, entre Cusco y Yucay, 3900 m., *Ferreyra 9866;* Saxihuaman, *Mathias 3678.* Pr. Calca: alrededores del Calca, 2800 m., *Vargas 4083.* Pr. Paucartambo: laderas de Paucartambo, arcillo-pedregoso, 3400 m., *Vargas 910.*—Huancavelica: Pr. Huancavelica: west of and above Huando, road to Huancavelica, ca. 5 km. above bridge over Río Palca, 3650 m., *Hutchison 1677.*—Huánuco: Pr. Tingo María: Cordillera Azul below Tea Garden on road to La Divisória, *Mathias 3444.*—Junín: Pr. Tarma: cercanías de Tarma, *Isern* (*Cuatrecasas 2552*).—La Libertad: Pr. Trujillo: Río Moche, arcillo-arenoso, 30 m., *Ridoutt 173;* Santa Clara (Valle Chicama), en borde de acequia, 55 m., *López 187.*—Lima: Pr. Huarochirí: Matucana, ditch, 2400 m., *Asplund 11099;* Matucana, at base of stone fence, 8000 ft., *Macbride & Featherstone 382.* Pr. Lima: Chaclacayo, entre Lima y Chosica, 700 m., *Ferreyra 11138;* Rimac Valley, 700 m., *Rauh & Hirsch 113;* Chinchin (Cheuchin), *Ruiz & Pavón;* roadsides, waste ground, etc., 500 ft., *Macbride & Featherstone 53;* Chosica, 800 m., *Soukup 2048;* Hacienda Villa, 18 km. sur de Lima, 40–50 m., *Ferreyra 10466;* Lima, Hipodromo San Felipe, 157 m., *Ferreyra 11109;* inmediaciones de la Hacienda Infantas cerca a Lima, *Ridoutt.* Pr. Chancay: Supe, in sandy wash near the sea, 3 m., *Eyerdam 9076.*—Puno: Pr. Puno: Cerros de Puno, 3900 m., *Ferreyra;* Isla de Amantani, 3900 m., *Aguilar;* Capachica Peninsula, Lake Titicaca, 12,500 ft., *Tutin 1215.* Pr. Huancané: Conima, cerro Calvario, 3900 m., *Aguilar;* Miajachi, camino a Huancané, orillas del río, 3800–3900 m., *Aguilar 163.*

A subtropical weed. Mexico, Central America and West Indies to Argentina and Chile, sporadic to New York, Oregon and California. *Apium leptophyllum* is a wide spread ruderal occurring throughout the world in subtropical environments. In marginal habitats or in areas of heavy grazing or mowing it may be modified in vegetative characters to such an extent that it is difficult to distinguish from *A. laciniatum*. *Apium laciniatum* is, as far as we know, confined to the loma vegetation. The following specimens are referred to *A. leptophyllum* on the basis of geographical location since they were not collected in the coastal lomas of Peru. However, in vegetative characters they suggest *A. laciniatum*. Ancash: Pr. Huaráz: sandy wash, 3100–3150 m., along streams south of Río Santa, opposite Huaráz, *Pennell 15333*.—Huánuco: Pr. Huánuco: Mito, about 9000 ft., *Macbride & Featherstone 1682*.—Lima: Pr. Canta: bare rocky slope of small canyon, 3000–3200 m., *Pennell 14594*. Pr. Huarochirí: Matucana, 8000 ft., *Macbride & Featherstone 236*.—Puno: Pr. Melgar: Chuquibambilla, rocky clay soil on puno, 3900–4000 m., *Pennell 13349;* 3850–3900 m., *Pennell 13405*.

ARRACACIA Bancroft

Arracacha DC. Bibl. Univ. Sci. & Arts 40: 78. 1829. *Velaea* DC. Coll. Mém. 5: 61. 1829. *Vellea* D. Dietr. ex Steud. Nom. Bot. ed. 2. 2: 746. 1841.

Reference: Constance, Bull. Torrey Club 76: 39–52. 1949.

Stout or slender, erect, herbaceous or somewhat woody, caulescent, branching or simple, glabrous to pubescent perennials, from taproots or tubers. Leaves petiolate, once to several times ternate, pinnate, or ternate-pinnate, the leaflets or ultimate divisions various. Petioles sheathing. Inflorescence of loose to somewhat compact compound umbels; peduncles terminal and lateral, or rarely only terminal, occasionally some umbels sessile. Involucre wanting or vestigial. Fertile rays few to numerous, spreading-ascending to divaricate and reflexed. Involucel of few short to long, narrow bractlets, shorter to longer than fruit or wanting. Fertile pedicels few, spreading-ascending to reflexed. Flowers white, greenish-yellow, greenish, reddish-brown or maroon, or purple; petals oblanceolate to obovate with a narrower inflexed apex; calyx teeth obsolete; styles short to long, erect to spreading or reflexed, the stylopodium conic and conspicuous to depressed and indistinct. Carpophore 2-parted to the base or only bifid, flat or terete. Fruit lanceolate or oblong to ovoid, usually narrowed at apex, compressed laterally,

glabrous or pubescent; ribs prominent, acute to obtuse, or filiform and indistinct; vittae solitary to several in the intervals, 2–several on commissure; seed subterete in transection, often channeled under vittae, the face sulcate or concave.

The genus is well represented by some 25 species in the flora of Mexico and Central America. The five endemic Peruvian species are the southernmost extension of the genus. One species, *A. xanthorrhiza*, "arracacha," is commonly cultivated in Latin America.

Leaflets spinulose-serrate; stylopodium conic; carpophore bifid about ¼ its length; fruit tapering at apex.....*A. elata.*

Leaflets variously serrate to incised or lobed, not spinulose-serrate; stylopodium depressed; carpophore 2-parted to the base (unknown in *A. peruviana*); fruit blunt at apex.

Rays 4–8 cm. long; bractlets linear, herbaceous, exceeding reddish-brown flowers.....*A. peruviana.*

Rays 1–4 cm. long; bractlets broad and scarious, or linear but shorter than purple or greenish flowers.

Bractlets scarious or scarious-margined, lanceolate to obovate.

Bractlets 4–8, obovate to lanceolate, scarious, 5–10 mm. long, exceeding the flowers; ribs of fruit very prominent and corky; vittae small, 2–3 in the intervals.....*A. incisa.*

Bractlets 3–6, ovate-acuminate, narrowly scarious-margined, 2–6 mm. long, shorter than the flowers; ribs of the fruit filiform; vittae large, solitary in the intervals.
A. equatorialis.

Bractlets herbaceous, linear.

Plants 5–12 cm. high; fruit (immature) oblong, 10 mm. long, 2–3 mm. broad, constricted below apex; vittae solitary in the intervals.....*A. xanthorrhiza.*

Plants 3–4 dm. (to 1 m.) high; fruit ovoid, 6–7 mm. long, 4–5 mm. broad, not constricted; vittae 2–3 in the intervals.....*A. andina.*

Arracacia andina Britt. Bull. Torrey Club 18: 37. 1908.

This species was described from Bolivian collections. Peruvian specimens tentatively referred here by Constance in 1949 (Bull. Torrey Club 76: 49) are apparently *A. equatorialis*. Better and more mature material is needed to define these taxa. A fragmentary collection at Chicago Natural History Museum (no. 870541) labeled in

handscript "Cuchero, Peruvia, 1829" (Huánuco) and with a printed locality "Brasilien leg. Poeppig" may be referable here. However, the material is too immature and too fragmentary for positive identification. Furthermore, the mixture of data on the label makes the locality suspect.

Arracacia elata Wolff, Bot. Jahrb. 40: 304. 1908.

Stout, clambering, branching, up to 4.5 m. high, the foliage essentially glabrous; leaves ovate, 1–3 dm. long, ternate-1–2-pinnate, the leaflets lanceolate to ovate, acute or acuminate, cuneate to rounded at base, the lower distinct and short-petiolulate, the upper sessile and confluent, 3–6 cm. long, 1–4 cm. broad, sharply spinulose-serrate and often incised toward base, the lower surface paler and glabrous, strongly reticulate, a squamulose tuft on the upper side of the sulcate rachis at the base of the larger leaflets; petioles 15–45 cm. long, their lower one-third broadly sheathing; cauline leaves similar, the uppermost with petioles wholly sheathing and inflated; inflorescence branching, the peduncles arising axially, 10–25 cm. long, squamulose at apex; involucre wanting, or occasionally of a single leaf sheath; fertile rays 4–15, slender, spreading-ascending, 3–6 cm. long, scaberulous at apex; involucel of 8–10 linear to lanceolate, entire or few-toothed unequal bractlets 3–15 mm. long, the longer exceeding the flowers but shorter than the fruit; fertile pedicels 1–8, spreading, 5–8 mm. long; flowers greenish or yellow, the petals oval; stylopodium conic, the styles slender, recurved; carpophore bifid about one-fourth its length, rigid; fruit ovoid, 5 mm. long, 3 mm. broad, glabrous, the ribs prominent, obtuse, with narrow, sharply V-shaped intervals; vittae very small and indistinct, forming a continuous layer between seed and pericarp; seed deeply channeled under the intervals, the face sulcate.—F.M. Neg. 3473.

Amazonas: Pr. Chachapoyas: "Ostl. von Chachapoyas zwischen den Tambo Ventillas u. Piscohuanuma," 3300 m., *Weberbauer 4423*, type (entre el tambo Ventillas y Piscohuanuma, camino de Chachapoyas a Moyobamba).—Ayacucho: Pr. Huanta: Choimacota Valley, 3000 m., *Weberbauer 7584*.—Cajamarca: 3500–3800 m., *Vargas 10369*.—Cusco: Pr. Urubamba: woods, Veronica, 3000 m., *Rauh & Hirsch 1049*.—Huánuco: Pr. Pachitea: Tambo de Vaca, 13,000 ft., *Macbride 4456*.—La Libertad: Pr. Otuzco: Chilte (Hda. Llaguén), en quebrada pedregosa, *López 0615*.—Puno: Pr. Carabaya: entre Ayapata y Kahualluyoc, 3595–3800 m., *Vargas 10747*.

Known only from Peru.

Arracacia equatorialis Const. Bull. Torrey Club 76: 46. 1949.

Slender, branching, 4–8 dm. high, the foliage squamulose; leaves triangular-ovate, 6–9 cm. long, biternate or bipinnate, the leaflets ovate to lanceolate, acute to acuminate, cuneate to truncate at base, the lower distinct and short-petiolulate, the upper sessile and confluent, 1.5–3 cm. long, 1–2.5 cm. broad, mucronate-serrate and the larger incised or lobed, squamulose on sheaths, rachises, veins, and margins beneath with linear scales, squamulose or merely scaberulous above, the lower surface paler and reticulate, a squamulose tuft on the upper side of the sulcate rachis at the base of the larger leaflets; petioles 10–20 cm. long, sheathing only at base; cauline leaves reduced upward, with linear to lanceolate, elongate divisions, the obovate petioles wholly sheathing, little inflated; inflorescence branching, the peduncles arising in whorls or singly, 2–12 cm. long, the terminal sometimes subsessile, squamulose at apex; involucre usually wanting; fertile rays 2–6, slender, spreading-ascending, 2–4 cm. long, scaberulous; involucel of 3–6 ovate-acuminate, entire, subequal, narrowly scarious-margined bractlets 2–6 mm. long, shorter than flowers and fruit; fertile pedicels 1–3 (–5), stout, ascending, 3–5 mm. long; flowers purple, the petals obovate; stylopodium depressed, the styles slender, spreading-ascending; carpophore 2-parted to base, lax, filiform; fruit ovoid-oblong, 8–9 mm. long, 3–4 mm. broad, glabrous, the ribs filiform, acute; vittae large, solitary in the intervals, 2 on the commissure; seed channeled under the tubes, the face deeply sulcate.

Callacate, *Jelski 354*.—Apurimac: Pr. Andahuaylas: quebrada Posoconi, 2650 m., *Vargas 8795*.—Cusco: San Sebastían, grassy place on summit of bluff, 3300–3400 m., *Pennell 13628*. Pr. Cusco: Cerro Sape, frente a Sacsahuaman, cerca a la ciudad de Cusco, 3400 m., *Ferreyra 2675*. Pr. Paruro: Araypallpa, 3100 m., *Vargas 411*.—Junín: Pr. Tarma: Huasa-huasi, *Ruiz & Pavón;* entre Palca y Huacapistana, 2400–2700 m., *Weberbauer 1745;* Carpapata, 2500 m., *Cerrate 2806;* entre Palca y Carpapata, 2500 m., *Cerrate 929;* quebrada pedregosa, 2300–2500 m., *López 802;* Huacapistana, Valle de Tarma, 2400 m., *Velarde 722;* Chanchamayo, *Isern* (*Cuatrecasas 2417*). Pr. Huancayo: Huancayo, alrededores, *Soukup 3579*.

Southern Peru to Ecuador.

Arracacia incisa Wolff, Bot. Jahrb. 40: 305. 1908.

Stout, caulescent, branching, 3–12 dm. high, the foliage squamulose; leaves triangular-ovate to ovate-lanceolate, 1–2.5 dm. long, ternate-pinnate or bipinnate, the leaflets triangular-ovate to ovate-

oblong, acute, cuneate or truncate at base, the lower distinct and short-petiolulate, the upper sessile and the larger pinnately incised, squamulose on margins and along veins on both surfaces, the lower surface paler and reticulate, a squamulose tuft on the upper side of the sulcate rachis at the base of the larger leaflets; petioles 8–16 cm. long, narrowly sheathing at base, the sheaths scaberulous on the veins; cauline leaves with wholly sheathing, inconspicuously inflated petioles; inflorescence branching, the peduncles arising axially and terminally, 2–12 cm. long, squamulose at apex; involucre wanting, or of 1 or 2 sheathing bracts; fertile rays 4–8, stout, spreading-ascending, 1–4 cm. long, scaberulous at least at apex; involucel of 4–8, obovate to lanceolate, scarious, denticulate-margined, unequal bractlets, 5–10 mm. long, the green central portion projecting as an acuminate point, exceeding flowers but shorter than fruit; fertile pedicels 2–6, stout, spreading, usually 2–5 mm. long, scaberulous; flowers dark purple or greenish, the petals obovate; stylopodium depressed, the styles slender, divaricate; carpophore 2-parted to base, lax; fruit ovoid, 5–8 mm. long, 3.5–6 mm. broad, the ribs very prominent and corky, acute; vittae small, 2–3 in the intervals, 3–6 on the commissure, frequently some accessory ones under the ribs or in the intervals; seed scarcely channeled under the intervals, the face deeply sulcate.—F.M. Neg. 3472.

Ancash: Pr. Bolognesi: Capillapunta, Cerro al S. de Chiquián, 3560 m., *Ferreyra 5712, Cerrate 155.*—Cusco: Pr. Paucartambo: Paucartambo Valley, Hacienda Churu, 3500 m., *Herrera 1391;* Kencumayo, 3300 m., *Woytkowski 199.* Pr. Cusco: Cusco, *Rose & Rose 19034.*—Huánuco: Pr. Pachitea: steep rocky open grassy slope, Huacachi, estación near Muña, 6500 ft., *Macbride 4163.*—Lima: Pr. Huarochirí: "in declivibus rupestribus prope Tambo, ad viam ferream inter oppida Lima et Oroya," 2650 m., *Weberbauer 165,* type; Viso, sandy hillside, 2800 m., *Goodspeed, Stork & Horton 11540;* valley of Río Rimac near Lima-Oroya highway at km. 90 east of Lima, 3000 m., *Goodspeed & Weberbauer 33059;* Matucana, 8000 ft., *Macbride & Featherstone 326, 2949;* Río Blanco, 12,000 ft., *Macbride & Featherstone 730.* Pr. Canta: cerca a Culluay entre Canta y La Viuda, 3600–3700 m., *Ferreyra 12964.*—Pasco: Pr. D. Carrión: in shrub on southwestern canyon slope, Yanahuanca, 10,000 ft., *Macbride & Featherstone 1244.*

Known only from Peru.

This species and *A. peruviana* have been generally confused, largely because of the inadequacy of the original description. The

involucels of the two species are entirely distinct. *Arracacia incisa*, with its conspicuous scarious involucels, deep purple flowers, and blunt, prominently ribbed fruit, is one of the most distinctive species of the genus. The taproot is fleshy and has a fragrance of anise.

Arracacia peruviana (Wolff) Const. Bull. Torrey Club 76: 45. 1949. *Velaea peruviana* Wolff, Bot. Jahrb. 40: 303. 1908.

Slender, branching, 6–9 dm. high, squamulose to scaberulous throughout, the stem base clothed with dry sheaths, from a branched taproot; leaves ovate-lanceolate, 2–3 dm. long, bipinnate, the leaflets ovate to lanceolate, acute, cuneate at base, the lower distinct and short-petiolulate, the terminal sessile and confluent, 2–5 cm. long, 1–4 cm. broad, coarsely sinuately lobed and mucronulate-serrate, squamulose on veins and margins, the lower surface paler and reticulate; petioles 1–3 dm. long, sheathing below; cauline leaves pinnate, the uppermost with short, wholly sheathing petioles; inflorescence of alternate axillary peduncles, 7–15 cm. long, squamulose at apex; involucre wanting, or of a single leaf sheath; fertile rays 5–10, slender, spreading, 4–8 mm. long, squamulose especially at apex; involucel of 6–10 entire linear bractlets 5–9 mm. long, exceeding flowers but shorter than fruit; fertile pedicels 2–6, spreading, 5–6 mm. long, squamulose or scaberulous above; flowers reddish-brown, the petals obovate; stylopodium depressed, the styles slender, spreading-erect; carpophore unknown; fruit ovoid, 4–6 mm. long, 3–4 mm. broad, glabrous, the ribs filiform; vittae large, solitary in the intervals, 2 on the commissure; seed face deeply and narrowly sulcate.—F.M. Neg. 28335.

Ancash: Pr. Cajatambo: infra Ocros, 3000–3200 m., *Weberbauer 2748*, type.—Ayacucho: Pr. Huanta: mountains northeast of Huanta, *Weberbauer 7513*.—Lima: Pr. Yauyos: Cuchapaya-pampa, cerca (arriba) a Tupe, 2830 m., *Cerrate 1027*.—Moquegua: Pr. Mariscal Nieto: Carumas, *Weberbauer 7269*.

"Rainy-green formation," moist shrub areas, Peru, 2800 to 3200 meters.

Arracacia xanthorrhiza Bancroft, Trans. Agr. Hort. Soc. Jamaica 1825: 5. 1825. *Conium arracacha* Hook. Exot. Fl. *pl. 152*. 1825. *Arracacha esculenta* DC. Bibl. Univ. Sci. & Arts 40: 78. 1829. *Bancroftia xanthorrhiza* Billb. Linn. Samf. Handl. 1: 40. 1833.

Stout, caulescent, branching, 5–12 dm. high, glaucous, the foliage squamulose and scaberulous; leaves broadly ovate, 10–35 cm. long

and broad, biternate or bipinnate, the leaflets ovate-lanceolate to triangular-ovate, acuminate, cuneate to rounded at base, the lower distinct and often short-petiolulate, the upper sessile and confluent, 4–12 cm. long, 1.5–6.5 cm. broad, coarsely simply or doubly mucronate-serrate and incised or lobed, squamulose or scaberulous on rachises, veins, and margins with flattened oblong or linear scales, the lower surface pale and reticulate, a squamulose tuft on the upper side of the sulcate rachis at the base of the larger leaflets; petioles 0.8–4.5 dm. long, sheathing only at base; cauline leaves reduced upward, mostly ternate or 3-parted, with lanceolate, acuminate divisions, the lower alternate and petiolate, the upper often opposite and wholly sheathing with narrow, scarcely inflated sheaths; inflorescence branching, the peduncles arising in whorls or singly, 3–10 cm. long, squamulose or scaberulous at apex; involucre wanting; fertile rays 5–12, slender, spreading-ascending, 1.5–4 cm. long, scaberulous; involucel of 5–8 linear, entire, unequal, herbaceous bractlets 2–5 mm. long, shorter than flowers and fruit; fertile pedicels 3–8, slender, spreading-ascending, 2–4 mm. long; flowers purple or greenish, the petals oval; stylopodium depressed, the styles slender, ascending; carpophore 2-parted to base; immature fruit oblong, 10 mm. long, 2–3 mm. broad, constricted below the apex, glabrous, the ribs prominent, acute; vittae rather large, solitary in the intervals, 2 on the commissure; seed channeled under the vittae, the face deeply sulcate.

Illustrations: Bot. Mag. 58: *pl. 3092.* 1831. DC. Mém. Soc. Phys. Génève 6: *pl. 1.* 1833.

Cusco: Pr. Cusco: Colimas del Saxaihuaman, 3600 m., *Herrera 858.*—Lima: Pr. Huarochirí: Altura de Surco, 3000–3200 m., *Ferreyra 679.*

This is the commonly cultivated *arracacha* of northern South America. Little is known of its domestication and its origin in the wild. An account of the cultivation of the species is given by W. H. Hodge, The Edible Arracacha, a little-known root crop of the Andes, Economic Botany 8: 195–221. 1954.

AZORELLA Lam.

Fragosa Ruiz & Pav. Prodr. Fl. Peruv. 43: *pl. 34.* 1793. *Chamitis* Banks ex Gaertn. Fruct. 1: 94, *pl. 22, f. 4.* 1788.

Low and spreading, usually cushion-forming glabrous or pubescent perennial herbs. Leaves petiolate, membranaceous to fleshy or coriaceous, simple and entire to 5–7-lobed. Petioles sheathing and

persistent on the branches. Inflorescence of simple umbels; peduncles terminal, or some or all umbels sessile. Involucre present, usually hidden by the terminal leaves. Pedicels spreading-ascending or erect, often elongate. Flowers greenish-white to yellow; petals oval, without a narrower inflexed apex; calyx teeth prominent to obsolete; styles short, persistent or not, the stylopodium conical to depressed. Carpophore lacking. Fruit ovoid to orbicular, terete to somewhat compressed dorsally, glabrous; ribs prominent to obscure; vittae minute, solitary under the ribs, a woody endocarp surrounding the seed cavity; seed subterete to flattened dorsally in transection, the face plane.

A characteristic genus of cushion plants of the high Andes and lower latitudes of South America, commonly known as *llareta*, or *yareta*, and used as fuel.

Plants forming hard, woody cushions 1 m. or more high; umbels 1–5-flowered.

Leaves entire; fruit orbicular, about 4.5 mm. long...*A. compacta.*

Leaves lobed; fruit ovate, about 2.5 mm. long.

Leaves shortly 3-lobed, the lobes subequal.....*A. corymbosa.*

Leaves shortly 5-lobed, the median lobe elongate..*A. pulvinata.*

Plants forming low mats or cushions to about 10 cm. high; umbels mostly more than 5-flowered.

Leaf blades linear, mostly entire.....*A. diapensioides.*

Leaf blades neither linear nor entire, crenate, toothed, or deeply lobed.

Petioles narrowed above the sheath, leaf blades with mostly obtuse lobes or crenations.

Leaf blades cuneate and decurrent, the margins usually shallowly bilobed at apex.....*A. biloba.*

Leaf blades truncate to cordate, the margins crenate to crenately lobed.....*A. crenata.*

Petioles pulvinate, leaf blades deeply 3–7-incised, the lobes spinulose.....*A. multifida.*

Azorella biloba (Schlecht.) Wedd. Chlor. And. 2: 195, *pl. 66 B.* 1860. *Fragosa biloba* Schlecht. Linnaea 28: 478. 1856. *Azorella biloba β strigosa* Wedd. Chlor. And. 2: 195. 1860. *?A. biloba α normalis* f. *subglabra* Kuntze, Rev. Gen. 3 (2): 111. 1898.

Plants cespitose, 1–5 cm. high, from a long, stout taproot, acaulescent, the leaves clustered at the apex of the rootstock; leaves petiolate, the petioles to 2.5 cm. long, sparsely strigose-setose, fibrillose and membranous, dilated below; leaf blades oblong, cuneate and decurrent, 0.5–25 mm. long, 3–10 mm. broad, palmately nerved, shallowly to deeply 2-lobed at the apex, rarely entire or inconspicuously 3-lobed, the lobes obtuse, cuneate, glabrous to densely strigose; inflorescence sessile or short-pedunculate, mostly shorter than the leaves, the peduncles more or less strigose-pilose, the hairs brownish-white; involucral bracts several, shorter than the flowers, linear-lanceolate, obtuse, ciliate-strigose especially on the margins; umbels about 10-flowered, the flowers greenish-white or yellowish; pedicels to 10 mm. long, glabrous; fruit ovate, about 2.5 mm. long, about 2 mm. broad, glabrous, the 3 dorsal ribs conspicuous; calyx teeth prominent, deltoid; stylopodium depressed-conical, the styles persistent.

Illustrations: Wedd. Chlor. And. 2: *pl. 66 B.* 1860. Bull. Internat. Ceska Akad. Fr. Jos. 13: *pl. 3, figs. 4, 5.* 1909.

Cusco: Pr. Calca: paso de Amparacs, en rocas, 4500 m., *Vargas 4044.* Pr. Quispicanchis: Cordillera Ausangate, 4500 m., *Rauh & Hirsch 1189.* Pr. Canchis: Uyumiri near Sicuani, 14,000 ft., *Stafford 965.* Pr. Cusco: Cord. de Cusco, *Gay.*—Junín: Acopalca-nevado, plus 4000 m., *Soukup 3704.*—Puno: Pr. Carabaya: bajando abra de Antapampa, laderas, 4300 m., *Vargas 6838;* 4150 m., *Vargas 6848.* Carabaya, *Lechler,* type. Pr. Huancané: in pampa, Moho, 3125 m., *Shepard 95.*

High Andes to Ecuador, Bolivia, and Argentina.

Azorella compacta Phil. Anal. Mus. Nac. Chile 8: 28. 1891. *Laretia compacta* Reiche, Anal. Univ. Chile 104: 784. 1899; Reiche, Fl. Chile 3: 63. 1902. *Azorella prismatoclada* Domin, Repert. Sp. Nov. 4: 297. 1907. *A. columnaris* Wolff, Bot. Jahrb. 40: 288. 1908. *A. yareta* Hauman, Physis 4: 485, *f. 3d, 4c, 5, 6.* 1919.

Plants forming hard, dense cushions 1 m. or more high with branching, woody, angular stems, clothed with old leaves; leaves rosulate, sessile, thick, carinate, ovate to oblong, 3–6 mm. long, 1–4 mm. broad, expanded toward base, mucronate or obtuse, glabrous, the leaves on peripheral branches larger and sometimes horizontally oriented; umbels sessile to short-pedunculate, 4–5-flowered; pedicels 1–2 mm. long; fruit orbicular, about 4.5 mm. long and broad, glabrous; calyx teeth persistent.—F.M. Neg. 28319.

Illustrations: Bull. Internat. Ceska Akad. Fr. Jos. 13: *pl. 3, f. 13;* 14: *pl. 4, f. 4, 5.* 1909. Drude in Engl. & Prantl, Pflanzenf. 3 (8): 131, *f. 52.* 1897. Reiche, Bot. Jahrb. 28: *pl. 1, f. 16.* 1899 (fruit section).

Arequipa: Pr. Arequipa: Solitario, 4400 m., en rocas, *Vargas 13113;* cimbral i Salinas 4350 m., arenoso-pedrigosos, *Vargas 12695.* Mount Chacani, near Arequipa, 17,000 ft., *Bailey;* near Arequipa, 16,400 ft., *Douglass;* crevices of rocks and rocky slopes, Nevado de Chacani, 4300–4600 m., *Pennell 13317;* southern slope of Chacani, near Arequipa, 15,000–16,000 ft., *Bailey.* Pr. Cailloma: Vincocaya, *Rose & Rose 18946;* near Crucero Alto, in dense clumps, 2 ft. across, 15,000 ft., *R. S. Williams 2504.*—Moquegua: Pr. Mariscal Nieto: Cordillera above Torata, 4300 m., *Weberbauer 7477.*—Puno: Pr. Chucuito: entre Chilliwa i Mazocruz, Livini, 4100–4600 m., *Vargas 13012.*

To Argentina, Bolivia and Chile.

This species is a source of firewood in the high Andes where it is commonly known as *yareta.* We believe this taxon to be quite distinct from the genus *Laretia* to which it has been referred. In habit as well as in other morphological characters *A. compacta* is closely related to *A. corymbosa.* A discussion of this plant has been published by W. H. Hodge, Yareta, Fuel Umbellifer of the Andean puna, Econ. Bot. 14: 113–118. 1960.

Azorella corymbosa (R. & P.) Pers. Syn. 1: 303. 1805. *Fragosa corymbosa* R. & P. Fl. Peruv. 3: 27, *pl. 250, f. a.* 1802.

Plants cespitose forming large hard cushions, branching from a woody caudex, the branches clothed with old leaves; leaves rosulate, the blades pulvinate, truncate, 3–4 mm. long, about 1.5 mm. broad, deeply 3-lobed, the lobes subequal, glabrous on the dorsal surface, sparsely fibrillose ventrally, palmately veined, the veins departing from the apex of the dilated petiole; petioles 7–8 mm. long, wholly pulvinate, fibrillose especially on the margins; umbel sessile, few-flowered, the pedicels stout, swollen above, 7–10 mm. long, glabrous; fruit ovate, 2–2.5 mm. long, about 2 mm. broad, the ribs inconspicuous; calyx teeth inconspicuous; stylopodium depressed, the styles not persistent.—F.M. Neg. 18267.

Huánuco: *Ruiz & Pavón,* type. Pr. Pachitea: in mounds on rocky outcrops, Tambo de Vaca, 13,000 ft., *Macbride 4899.*

Andes of Ecuador and Peru.

Azorella crenata (R. & P.) Pers. Syn. 1: 303. 1805. *Fragosa crenata* R. & P. Fl. Peruv. 3: 27, *pl. 249, f. c.* 1802. *F. reniformis* R. & P. l.c. 26, *pl. 249, f. b. F. cladorrhiza* R. & P. l.c. 27, *pl. 250, f. b. Azorella "cladorhisa"* Pers. Syn. 1: 303. 1805. *A. reniformis* Pers. l.c. *Bolax cladorrhizus* Spreng. in Roem. & Schult. Syst. Veg. 6: 362. 1820. *B. crenatus* Spreng. l.c. *? Fragosa glabra* Lag. Amen. Nat. 2: 93. 1821. *Azorella crenata β compacta* Wedd. Chlor. And. 2: 195. 1860. *A. crenata* var. *mutisiana* Hieron. Bot. Jahrb. 20: Beibl. 49: 71. 1895. *A. mutisiana* Hieron. ex Wolff, Repert. Sp. Nov. 17: 266. 1921.

Plants cespitose, 2–12 cm. high, from a long slender branching root, acaulescent and cushion-forming; leaves clustered at apex of rootstock, petiolate, the petioles 0.3–10 cm. long, densely strigose-pilose, fibrillose below; leaf blades obovate to orbicular, 0.4–18 mm. long, 4–20 mm. broad, obtuse, the margins entire below, crenate to crenately lobed above, the lobes mostly obtuse, subglabrous to hirsute-pilose above, more or less strigose beneath with grayish-white hairs, the hairs to 4 mm. long, the primary nerves 5–9, palmate; peduncles 1–3 cm. long, densely strigose-pilose with grayish-white hairs, shorter than the leaves; involucral bracts 5–7, equaling or exceeding the pedicels, linear-lanceolate, acute, conspicuously pilose especially on the margins; umbels 5–12-flowered, the flowers greenish-white to yellowish; pedicels 2–7 mm. long, glabrous to pilose; fruit subglobose, 2–3 mm. long, about 1.5 mm. broad, glabrous, the dorsal ribs conspicuous; calyx teeth prominent; stylopodium conical, the styles persistent.—F.M. Negs. 18266, 3430, 37074.

Illustrations: Bull. Internat. Ceska Akad. Fr. Jos. 13: *pl. 3, f. 2.* 1909. Weberbauer, Vegetat. Erde 12: 209, *f. 44.* 1911; El Mundo Veg. And. Per. 371, *f. 26.* 1945.

Ancash: Conchucos, 4500 m., *Weberbauer 7240.*—Cusco: puna, Río Marcapata, 3800 m., *Rauh & Hirsch 1266.* Pr. Anta: Cordillera Salcantay, 4500 m., *Rauh & Hirsch 1447.*—Huancavelica: arriba de Laria, Dist. Conico, 3800–3950 m., *Tovar 2494.*—Huánuco: Pr. Huamalies: Monzón, *Weberbauer 3319;* Huamalies, *Ruiz & Pavón,* type of *Fragosa cladorrhiza.* Pr. Huánuco: puna de Panao, *Asplund 13716;* Mito, 9000 ft., *Macbride & Featherstone 1787.*—Junín: Pr. Junín: tundra vegetation from Lago Capillacocha to Lago Aguacocha, north of Carhuamayo, 4200–4400 m., *Constance & Tovar 3596;* Pampa de Junín, 26 km. southeast of Junín, open grassy steppe, 4100 m., *Constance & Tovar 3589.* Pr. Tarma: punas de Tarma, 3900 m., *Cerrate 981;* 3800–4000 m., *López 833;* Tarma, *Ruiz & Pavón,* type of *Fragosa crenata.* Pr. Yauli: Mar Tunel, 4000 m.,

Velarde 1960. Pr. Huancayo: quebradas east of Huancayo, 3400 m., *Stork & Horton 10213.*—Pasco: Cord. Raura, puna, 4300 m., *Rauh & Hirsch 1837.* Pr. Oxapampa: cumbre entre Capillacocha y Paucartambo, estepa de gramíneas, 4300–4500 m., *Ferreyra 5187.*—Piura: Huancabamba (Piura Divide), 10,000 ft., *Sandeman 4312.*—Without locality: *Dombey; Ruiz; Mutis* ex Herb. Humboldt; *Ruiz & Pavón.*

Páramos and grass steppes at 3000 to 4500 meters altitude in the Andes, from Venezuela to Peru.

Azorella diapensioides A. Gray, Bot. Wilkes Exped. 1: 702. 1854. *A. diapensioides β glabra* Wedd. Chlor. And. 2: 190. 1860. *?A. diapensioides α denticulata* Wedd. l.c. *A. glabra* Wedd. l.c. *pl. 67A.* 1860. *? A. lehmanii* Hieron. Bot. Jahrb. 20: Beibl. 49: 71. 1895.

Plants cespitose, forming hard, dense, somewhat convex bright green to blue-green cushions to 10 cm. high and 50 cm. across, branching from a woody caudex, the branches clothed with persistent leaf sheaths; leaves rosulate, the leaf blades linear, 4–10 mm. long, 1.5–2 mm. broad, obtuse, apiculate to spinulose-tipped, decurrent, entire or the outermost rarely 1–3-lobed, the lateral lobes short, glabrous to sparingly strigose; petioles to 10 mm. long, pulvinate below, narrowed to the blade, sparingly fibrillose on the margins; umbels sessile, several-flowered, the flowers pale yellow to greenish; pedicels stout, to 4 mm. long, glabrous; fruit 2.5 mm. long, about 2 mm. broad, the ribs inconspicuous; calyx teeth inconspicuous; stylopodium depressed, the styles not persistent.

Illustrations: Engl. & Prantl, Pflanzenf. 3 (8): 127, *f. 50.* 1897. Schimper, Pflanzen-Geogr. 782, *f. 441 (1 & 2).* 1898. Jour. N. Y. Bot. Gard. 33: 55, *f. 1, 2.* 1932.

Apurimac: Soroccha Pass on trail Chincheros-Andahuaylas, open puna and among rocks, 4300 m., *West 3740.*—Arequipa: Pr. Arequipa: hacia el Solitario, 4400 m., pedregoso, *Vargas 13114.*—Cusco: *Vargas 5592.* Pr. Espiñar: alrededores de Yauri, 3900 m., *Vargas 12077.*—Huancavelica: Pr. Huancavelica: puna, Huancavelica, 3700 m., *Rauh & Hirsch 360a.*—Junín: Pr. Junín: tundra vegetation from Lago Capillacocha to Lago Aguacocha, north of Carhuamayo, 4200–4400 m., *Constance & Tovar 3593, 3595;* Hondores, southeast of Laguna Junín, between Junín and San Blas, open grass steppe, 4200 m., *Constance & Tovar 3592;* Pampa de Junín, 26 km. southeast of Junín, open grass steppe, 4100 m., *Constance*

& Tovar 3590. Pr. Yauli: 25 km. northeast of La Oroya toward Tarma, bare open grass steppe, 4000 m., *Constance & Tovar 3585;* Ticlio, stony slope, 4900 m., *Asplund 11656;* Paso de Anticona, 4500 m., *Cerrate 992;* Mar Tunel, 4000 m., *Velarde 1952.*—Lima: high Andes, Casa Caucha, *Wilkes Expedition.* Casapalca, 15,500 ft. in mats on slopes of alpine basin, *Macbride & Featherstone 847.*—Pasco: Cord. Raura, puna, 4300 m., *Rauh & Hirsch 1845.* Pr. Pasco: Cerro de Pasco, 4400 m., *Vargas 6596;* Huarón, naked earth, 4200 m., *Asplund 11804.*—Puno: Pr. Chucuita: hacia Chilliwa, 4100 m., *Vargas 13010.* Pr. Puno: near Puno, 4000 m., *Soukup 210, 214.* Pr. Lampa: Santa Lucia, *Stordy;* crece terrenos mui húmedos i resiste hasta 5000 m. altura, *Stordy 32.*—Tacna: Pr. Tacna: Tacora, *Weddell* (type of *A. diapensioides* α *denticulata*).—Without definite locality: Andes, *McLean.* Alpamarca, Andes, *Crooke.*

Common in grass steppes or puna and also in crevices of rocks, forming dense cushions, or hard, thin, somewhat convex mats. Locally used as fuel and known as *cuncuma, estrella chica, yareta* and *llareta.* High Andes to Bolivia.

Azorella multifida (R. & P.) Pers. Syn. 1: 303. 1805. *Fragosa multifida* R. & P. Fl. Peruv. 3: 27, *pl. 249, f. a.* 1802. *Bolax multifidus* Spreng. ex Roem. & Schult. Syst. Veg. 6: 362. 1820. *Azorella laxa* Wolff, Bot. Jahrb. 40: 288. 1908. *A. weberbaueri* Wolff, l.c. 287. 1908.

Plants forming small convex, bluish-green, gray to bright green mats to 75 cm. across, loosely branching near periphery, the branches clothed above with persistent leaf sheaths; leaves rosulate, the leaf blades thin, ovate to oblong, 3–13 mm. long, to 10 mm. broad, decurrent, 3–7-incised-lobed, the lobes spinulose-tipped, the margins entire or serrulate, the median lobe elongate, glabrous dorsally, more or less fibrillose above, pinnately veined; petioles pulvinate below, to 20 mm. long, fibrillose especially on margins; umbels sessile, several-flowered, the flowers greenish-white to yellowish; pedicels slender, to 8 mm. long, only slightly enlarged at apex; calyx teeth not persistent; fruit ovate, 1.5–2 mm. long, 1–1.5 mm. broad; stylopodium low-conical, the styles very short, erect.—F.M. Neg. 3429.

Illustrations: Rich. Ann. Gén. Sci. Phys. 4: *pl. 51, no. 4.* 1820. Wedd. Chlor. And. 2: *pl. 66 C.* 1860.

Ancash: Pr. Bolognesi: Chiquián, Pampa de Lampas, 4100 m., *Cerrate 1526;* Mahuay, 4700 m., *Cerrate 2223.*—Apurimac: Pr. Anda-

huaylas: km. 165 carretera entre Andahuaylas y Chincheros, puna, 3500 m., *Ferreyra 2808.* Pr. Abancay: entre Urahuasi y Abancay (km. 24), 3400 m., *Ferreyra 2786;* km. 45 east of Abancay, at Sayhuite, 3600 m., *Hutchison 1744;* Ampay, 3200–3800 m., *Vargas 8406.* —Ayacucho: Pr. Huananga: 75 mi. south of Ayacucho on road to Abancay, beginning descent to Ocros, 4000 m., *Hutchison 1707.*— Cajamarca: Pr. Hualgayoc: montañas de Nancho, 10,800 ft., *Raimondi 1750, 1749.* Pr. Cutervo: Cutervo, *Jelski 1114.*—Cusco: Pr. Cusco: between Cusco y Chinchero, 3800 m., *West 7167.* Pr. Quispicanchis: Cord. Ausangate, 4800 m., *Rauh & Hirsch 1257.* Pr. Anta: Cordillera Salcantay, 4500 m., *Rauh & Hirsch 1415.* Pr. Urubamba: Cordillera Veronica, puna, 4100 m., *Rauh & Hirsch 998;* Pacechac, Urubamba Valley, *Hill 186, 185, Mathews 516.*— Huancavelica: arriba de Laria, Dist. Conico, 3000–3950 m., *Tovar 2495.* Pr. Tayacaja: Hda. Huari, 3700 m., *Velarde 2013.*—Huánuco: Pr. Dos de Mayo: Cordillera Huayhuash, 4300 m., *Rauh & Hirsch 1843;* Huayhuash, rocks, 4100 m., *Rauh & Hirsch 1888.* Pr. Huamalies: in montibus a Monzón, 3400–3500 m., *Weberbauer 3341,* type of *Azorella laxa.*—Junín: Pr. Junín: tundra vegetation from Lago Capillacocha to Lago Aguacocha, north of Carhuamayo, 4200–4400 m., *Constance & Tovar 3594, 3597;* encima de la laguna de Capillacocha, cerca a Carhuamayo, 4300 m., *Ferreyra 3926;* tundra vegetation above Lago Aguacocha, north of Carhuamayo, 4400 m. *Constance & Tovar 3598;* Hondores, southeast of Laguna Junín between Junín and San Blas, 4200 m., *Constance & Tovar 3591.* Pr. Tarma: entre Oroya & Tarma, 4000 m., *Velarde 606.* Pr. Yauli: alrededores de Yauli, 3500–3600 m., *Tovar 3024.* San José, 13,000 ft., *Macbride & Featherstone 1103.*—La Libertad: Pr. Bolívar: Laguna de los Ichus, Bolívar, 3600 m., *López & Sagástegui 3244.*— Lima: Pr. Huarochirí: supra Lima, 4600 m., *Weberbauer 5180,* type of *Azorella weberbaueri.*—Pasco: Pr. Pasco: Cerro de Pasco, calcareous rock, 4300 m., *Asplund 11767;* "in frigidissimus Andium inter Cerro de Pasco de fodinas Gallquijirca," *Poeppig* (?); puna, Cord. Raura, 4400 m., *Rauh & Hirsch 1817.*—Piura: Pr. Huancabamba: above Huancabamba, road to Conchaque, 3100 m., *Hutchison 1625.* —Puno: Pr. Carabaya: abra Antapampa-juro-juro, 4300 m., *Vargas 6841.*—Without definite locality: *Dombey,* type; *Ruiz & Pavon.*

Forming large branched prostrate mats at high elevations in the Andes to Colombia and Bolivia. Locally known as *pasapamaquin* and *yareta.* Frequent in moist locations on grass steppes or puna or among rocks.

Azorella pulvinata Wedd. Chlor. And. 2: 194, *pl. 66 A*. 1860.

Plants forming great cushions, several meters broad, branching from a woody caudex, the branches clothed with persistent leaf sheaths; leaves rosulate, the leaf blades about 3 mm. long, shortly 5-lobed, the median lobe longer than the lateral, glabrous dorsally, the ventral surface densely clothed with long white hairs giving the upper surface of the cushion a frosted appearance, palmately veined, the veins departing from the apex of the dilated petiole; petioles wholly pulvinate, about 7 mm. long, fibrillose on margins; umbels sessile, ?1-flowered; pedicels stout, to 6 mm. long; fruit oblong, about 2.5 mm. long, about 1.5 mm. broad, the ribs inconspicuous; calyx teeth inconspicuous; stylopodium depressed-conical, the styles short.

Illustrations: Bull. Internat. Ceska Akad. Fr. Jos. 13: *pl. 3, f. 11*. 1909. Weberbauer, Vegetat. Erde 12: 200, *f. 30*. 1911. El Mundo Veg. And. Per. 378, *f. 35*. 1945. Math. & Const. Bull. Torrey Club 84: *f. 1*. 1957.

Ancash: Pr. Pallasca: Cordillera of Palagatos, 4450 m., *Weberbauer 7242*.—Cusco: Pr. Anta: Salcantay, 4700 m., *Rauh & Hirsch 1483*.—Huánuco: Pr. Dos de Mayo: Huayhuash, 4900 m., rocks, *Rauh & Hirsch 1887*.

High Andes to Bolivia, at the upper limits of vegetation.

BOWLESIA R. & P.

Erect, prostrate or vining, slender, herbaceous, caulescent, branching, stellate-pubescent and/or stellate-glochidiate to glabrate, annuals or perennials, from slender taproots. Leaves petiolate to subsessile above, stipulate, alternate or opposite, membranaceous, simple, palmately veined and palmately lobed or divided. Petioles not sheathing, the stipules scarious, lacerate. Inflorescence of simple, few-flowered, subcompact umbels. Peduncles slender, axillary and terminal. Involucre of a few subulate, lacerate bracts or obsolete. Pedicels very short or obsolete. Flowers white, greenish-yellow, pinkish, or purplish; petals oblong to ovate, obtuse; calyx teeth prominent, ciliate, or obsolete; styles short, equaling to slightly exceeding the low-conic stylopodium. Carpophore lacking. Fruit broadly ovoid to narrowly oblong, constricted at the commissure and flattened dorsally or terete, the carpels plane or concave dorsally, the fruit thus appearing 2- or 4-winged, glabrate to stellate-pubescent

or glochidiate; ribs obsolete; vittae obsolete; seed flattened dorsally in transection, the face plane or convex.

A genus of about 12–15 species, widely distributed throughout temperate South America, extending to Mexico and the southwestern United States.

Calyx and involucre evident; ovaries, fruits, and stems stellate-pubescent, soft to the touch.

Upper umbels, or all of them, subsessile; fruit globose, inflated and becoming indented dorsally, unwinged.....*B. incana.*

Umbels usually all pedunculate; fruit ovoid or ovate, strongly flattened and either plane or concave dorsally, thus appearing 2- or 4-winged.

Ovaries and lower leaf surfaces densely stellate-pannose or -tomentose at least when young; lobes of basal and lower cauline leaves usually subequal, broadest near middle; petals usually conspicuously stellate-pubescent dorsally.
B. tropaeolifolia.

Ovaries and lower leaf surfaces stellate-hirsutulous (or the former rarely glabrous); central leaf lobe usually markedly longer than the others, the lobes all broadest at base; petals usually glabrous.....*B. lobata.*

Calyx and involucre obsolete or very inconspicuous; ovaries and fruits armed with glochids; stems beset with hard stellate processes, harsh to the touch.

Fruit glochids very slender, "asteroid," with 4–6 very short subrotate rays.....*B. flabilis.*

Fruit glochids slender, "coprinoid," with 8–12 slender, closely reflexed rays.

Leaves divided to base, the leaflets pinnately parted.
B. palmata.

Leaves usually not lobed more than halfway to base, the leaflets few-toothed to entire.

Stems scabrous with mostly 8-rayed processes; fruit dark brown, oblong-ovoid, 3–4 mm. long, 1.5–2 mm. broad.
B. setigera.

Stems scabrous with mostly 4-rayed processes, to glabrous; fruit light brown, ovoid, 2–3 mm. long, 1–2 mm. broad.

Stems rather stout, armed with usually 4-rayed processes; both carpels equally armed with glochids 0.5–1 mm. long.....*B. sodiroana.*

Stems filiform, subglabrate; one of each pair of carpels subglabrate, the other with glochids less than 0.5 mm. long.....*B. tenella.*

Bowlesia flabilis Macbr. Field Mus. Bot. 11: 32. 1931. *Drusa acutangula* Drude in Engl. & Prantl, Pflanzenf. 3 (8): 126. 1897. *Bowlesia palmata* var. *acutangula* Kuntze, Rev. Gen. 3 (2): 112. 1898, not *B. acutangula* Benth. 1856.

Annual, prostrate to ascending and scandent, 1.5–10 dm. long, dichotomously branched from a slender taproot, the stems sparsely to densely scabrous with sessile or short-stalked, 4-rayed stellate processes, the young foliage and inflorescence stellate-hirsute; lower leaves alternate, the upper alternate or opposite, petiolate, thinly membranaceous or occasionally somewhat thicker, the basal and lower cauline orbicular-reniform, 1–6 cm. long, 1.2–7.5 cm. broad, cordate to truncate at base, palmately 3-, 5-, or 7-lobed about to middle, with narrow to broad sinuses, the lobes lanceolate to ovate, acute, subequal or the terminal larger, entire or the larger with 1 or 2 lateral teeth or lobes, strigose or strigulose above at least on veins, with simple hairs, hirsutulous beneath with sessile or short-stalked, 4-rayed (cruciate) stellate hairs, bristly on veins and at summit of petiole, the petioles slender, 1.5–7.5 cm. long, somewhat bristly, dilated at base into an oval, scarious-margined sheath bearing 3–6 pairs of linear to linear-lanceolate, hyaline, acuminate, stipular processes 1–3 mm. long; upper cauline leaves reduced, narrower, truncate at base, usually 3-lobed or entire; peduncles obsolete, the umbels usually 1–4-flowered, subsessile in leaf axils of main stem or on slender axillary branches; involucre apparently lacking, but stipules and pedicel hairs often forming a concealing semi-involucre; flowers greenish-white; calyx obsolete; petals oval to ovate, 0.4–0.6 mm. long, plane, glabrous, subacute; ovaries glochidiate-roughened; pedicels up to 1 mm. long, densely white-hirsute, spreading; fruit broadly ovate to ovate-oblong, 2.5–4 mm. long, 1.8–2.5 mm. broad, 4-winged, narrowed at apex, a little cordate at base, the carpels strongly flattened dorsally, concave dorsally, the commissural face convex, usually sparsely stellate with sessile or subsessile, mostly 4-rayed hairs on the dorsal face and with or without 2 rows of hairs on the commissural face, the margins and dorsal ribs conspicuously armed with a border of prominently stalked, very shortly 4–6-rayed "asteroid" glochids, the rays spreading-reflexed, the stalks unequal, up to 2 mm. long.

Illustration: Pérez-Moreau, Physis 12: 86, *f. 1.* 1936 (as *Drusa acutangula*).

Cusco: Pr. Calca: Pisac, ca. 3200 m., *Velarde 1343.* Pr. Urubamba: Ollantaytambo, ca. 3000 m., *Cook & Gilbert 367a, 372, 1201.* —Huancavelica: Pr. Huancavelica: Peccsuca, 5 km. east of Conaica, *Tovar 277.*—Huánuco: Pr. Huánuco: wood-clearing, Mito, *Macbride & Featherstone 1718,* type.—Junín: Pr. Huancayo: Huancayo, *Soukup 1987.*

Rocky places in the Andes, from Ecuador to Bolivia and northern Argentina, at elevations of 2200 to 3480 meters; also in Mexico. Locally known as *opuisoro* and *uphuisuru* and considered a styptic to stop flow of blood; also used for the lungs.

Bowlesia incana R. & P. Fl. Peruv. 3: 28, *pl. 268, f. a.* 1802. *B. tenera* Spreng. Syst. 1: 880. 1825. *B. geraniifolia* Cham. & Schlecht. Linnaea 1: 382. 1826. *B. nodiflora* Presl ex DC. Prodr. 4: 75. 1830. *B. rotundifolia* Phil. Linnaea 28: 651. 1856. *B. incana* f. *tenera* Urban, Mart. Fl. Bras. 11 (1): 292, *f. 78II.* 1879. *B. incana* f. *crassifolia* Urban, l.c. *B. brevipes* Phil. ex Reiche, Fl. Chile 3: 59. 1902, nomen in synon. *B. septentrionalis* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 31. 1900. *B. rubra* Larrañga, Escritos Larrañga 2: 112. 1923. *B. asiatica* Nasir, Madroño 12: 217, *figs. 1–11.* 1954.

Illustrations: Spreng. Sp. Umbell. *pl. 5, f. 10.* 1818. Engl. & Prantl, Pflanzenf. 3 (8): 125, *f. 49A–F.* 1897. Cabrera, Man. Fl. Buenos Aires 347, *f. 128E–G.* 1958.

This species was described by Ruiz and Pavón as "habitat in Peruviae collibus ad *Huanuci, Rondos* et *Pillao* tractus." The only collection examined which purports to be from Peru is the ostensible isotype: *Dombey,* "In Peruvia," at Chicago Natural History Museum, and also F.M. Neg. 3410 of Berlin isotype. To our knowledge the species has not been collected in Peru since, and it is presumed that the original collections were actually obtained in Chile. *Bowlesia incana* is weedy and has become widely distributed as a weed but, curiously enough, not in Peru.

Bowlesia lobata R. & P. Fl. Peruv. 3: 28, *pl. 251, f. b.* 1802. *?B. diversifolia* Meyen, Reise, 1: 447. 1834, nomen. *B. palmata* var. *β* A. Gray, Bot. Wilkes Exped. 1: 696. 1854, in part. *B. acutangula* Benth. Pl. Hartw. 186. 1856. *B. palmata β acutangula* Kuntze, Rev. Gen. 3 (2): 112. 1898. *Drusa acutangula* Drude in Engl. & Prantl, Pflanzenf. 3 (8): 126. 1897, as to name only. *B. acutiloba* Wolff, Bot. Jahrb. 40: 284. 1908.

Perennial, vining, 3–6 dm. high or long, dichotomously branched from a multicipital caudex terminating in a slender taproot, the stems sparsely stellate with 4–5 (–8) -rayed sessile or stalked stellate hairs, or glabrate, the young foliage and inflorescence stellate-hirsutulous; leaves mainly opposite, weakly clustered toward base, petiolate, thinly membranaceous, the basal and lower cauline orbicular-reniform to broadly ovate, 1–7 cm. long, 1–7.5 cm. broad, strongly cordate and usually with a narrow sinus, palmately (3–) 5–7 (–9) -lobed about to the middle, the lobes oval or ovate-triangular to lanceolate, obtuse to acute or acuminate, broadest at base, the terminal usually longer than the others, all entire to shallowly trilobulate, weakly bristly-mucronulate, strigose or strigulose above with mostly simple or 2–3-forked hairs, thinly hirsutulous beneath with short-stalked or sessile 4–8-rayed stellate hairs, the petiole slender, 2–12 cm. long, dilated into an oval sheath, its margin bearing 1–5 pairs of linear to lanceolate, hyaline, acute or acuminate, fimbriate stipular processes 1–3 mm. long; upper cauline leaves, or all but the lowermost, reduced and shorter-petiolate upward, entire or 3-lobed and truncate or rounded; inflorescence of solitary or paired axillary peduncles bearing simple umbels, the umbels 1–3 (–5) -flowered; peduncles weak, short to very slender, 0.5–6 cm. long; involucre of several stipule-like hyaline linear or lanceolate bracts; flowers white or rose- or purple-tinged; calyx lobes linear to linear-lanceolate, hyaline, 0.5–1 mm. long, somewhat persistent, reflexed, shorter than petals; petals oblong-oval to oval, 1–2 mm. long, plane, glabrous or sparsely stellate-pubescent dorsally, a little narrowed at either end; ovaries usually stellate-pubescent, less commonly glabrous; pedicels 0.5–2.5 mm. long, or abortive, spreading or recurved; fruit ovoid or ovoid-triangular, 1.5–3 mm. long, 1.5–2 mm. broad, 2- or 4-winged, narrowed at apex, a little cordate, the carpels strongly flattened dorsally, plane or concave dorsally, the commissural face lightly convex, sparsely stellate-pubescent on both surfaces with sessile, 4–8-rayed hairs, or glabrous.—F.M. Negs. 3412, 31815.

"In peruvia ad Chancay, etc." *Ruiz;* "in peruviae Andium alpibus versus *Pillao* vicum, in locis apricis et fruticetis," *Ruiz,* type. —Cusco: Pr. Paucartambo: Llulluchayocc, 3750 m., *Vargas 4298.*—Cusco-Puno: Pucará, *Weberbauer 453.*—Lima: Pr. Huarochirí: between Río Blanco and Chicla, ca. 3600 m., *Asplund 11306;* Río Blanco, 3000–3500 m., *Killip & Smith 21605.* Pr. Yauyos: Capia, abajo de Tupe, 2800 m., *Cerrate & Tovar 1085.* Pr. Canta: Obrajillo, *Wilkes Expedition.*

Andes of Ecuador, central and southern Peru, Bolivia and northwestern Argentina, at elevations of 1600 to 4600 meters.

Bowlesia palmata R. & P. Fl. Peruv. 3: 28, *pl. 251, f. a.* 1802. *B. palmata α lacerata* Kuntze, Rev. Gen. 3 (2): 112. 1898.

Annual, erect, prostrate or climbing, 3–12 dm. long, dichotomously branched from a slender taproot, the stems densely scabrous with short-stalked or sessile, 4-rayed stellate processes, the young foliage and inflorescence densely hirsutulous with stellate and simple hairs; lower leaves alternate, the others opposite, petiolate, thinly membranaceous, the basal and cauline ovate to orbicular-reniform, 1.5–5 cm. long, 2–7 cm. broad, cordate to truncate, palmately 3- or 5-parted nearly to base, with rather narrow sinuses, the lobes lanceolate to ovate, subequal, entire to laciniately dissected, acute or acuminate, bristly mucronate, strigose above with mostly simple large trichomes, or a few smaller 2–4-forked hairs intermixed, hirsutulous beneath with sessile or subsessile, 4–6-rayed stellate hairs, the petioles slender, slightly dilated at base into a margin bearing 3–8 pairs of linear-filiform, hyaline stipular processes 1–4 mm. long; the uppermost cauline leaves reduced, narrower and shorter-petiolate, usually 3-lobed; peduncles usually abortive, or some rarely elongate (up to 3.5 cm. long!), the 1–4-flowered umbels sessile or subsessile in leaf axils; involucre apparently lacking; flowers greenish-yellow or yellowish-white; calyx lobes abortive, lanceolate, up to 0.2 mm. long; petals oval, 0.5–0.7 mm. long, plane, glabrous, narrowed at apex; ovaries sparsely covered with sessile or subsessile stellate hairs, the margins and dorsal midrib armed with stalked glochids; pedicels abortive, up to 1 mm. long; fruit triangular-ovoid, 2.5–4 mm. long, 2–3 mm. broad, narrowed at apex, strongly flattened dorsally, strongly concave dorsally with inrolled margins, 4-winged, the commissural surface convex, sparsely stellate on both surfaces with usually 8-rayed hairs, the margins and dorsal midribs armed with very slender, stalked, "coprinoid," 8–12-rayed glochids up to 2 mm. long, their rays sharply reflexed.

Illustrations: Rich. Ann. Gén. Sci. Phys. 4: *pl. 51, f. 3.* 1820. Weberbauer, Vegetat. Erde 12: 142, *f. 12.* 1911; El Mundo Veg. And. Per. 231, *f. 18.* 1945.

"Peru," *Dombey,* type.—Ancash: Pr. Bolognesi: Conay, 6 km. abajo de Chiquián, 2600 m., *Ferreyra 7404, Cerrate 600.* Pr. Casma: Lomas de Lupín, *Mathias 3671.*—Arequipa: Pr. Islay: Mollendo, *Hitchcock 22390;* 10 km. east of Islay, 300 m., *Worth & Morrison*

15713, 15714. Pr. Caravelí: Lomas de Capace, km. 651, several km. east of gas station "Cali" and up canyon, 250 m., *Hutchison 1308.*—La Libertad: Pr. Trujillo: Cerro Campana, 500 m., *López 0914,* quebrada bottom, 750 m., *Hutchison 1359.*—Lima: Pr. Lima: Lima, *Isern 2516;* San Gerónimo, ca. 500 ft., *Macbride 5897;* Lomas de Amancaës, 420 m., *Ferreyra 3962,* 400 m., *Ferreyra 11825,* 250 m., *Soukup 3121,* 200–600 m., *Pennell 15927;* Atacongo Lomas, 525 m., *Stork, Horton & Vargas 9285,* 300 m., *Ferreyra 183;* Cerros al norte de Chosica, 1800–1900 m., *Weberbauer 886;* Hacienda Pando, *Soukup 2561;* Santa Clara, *Rose & Rose 18618.* Pr. Chancay: Lomas de Pacar (Pativilca), 300 m., *Velarde 2322;* Lomas de Pativilca, 5 km. north of Barranca, 300 m., *Stork, Horton & Vargas 9224;* Cerro north of Barranca, 80 m., *Beetle 9088;* Lomas de Lachay cerca a Chancay, 400–560 m., *Ferreyra 3873, 8727,* 500 m., *Velarde 2277, Mathias 3674,* 300–400 m., *Cerrate 841,* 400 m., *Ridoutt.*

Moist slopes of coastal lomas and higher hills, from southern Ecuador and throughout western, northern and central Peru (to northern Bolivia?), at elevations of 80 to 2600 meters.

Bowlesia setigera Wolff, Bot. Jahrb. 40: 385. 1908. *B. lobata* var. *chiclensis* Ball, Jour. Linn. Soc. Bot. 22: 40. 1885, mistakenly published as *"chilensis"!*

Rather stout annual, decumbent at base and ascending, 1–5 dm. long, more or less dichotomously branched from a slender taproot, the stems stout, densely to sparsely scabrous with sessile or short-stalked, mostly 8-rayed stellate hairs or platelets, the young foliage and inflorescence stellate-hirsutulous; lower leaves alternate, the upper opposite, petiolate, thinly membranaceous, the basal and lower cauline orbicular-reniform, 1–4 cm. long, 1.5–4 cm. broad, narrowly cordate, palmately 3–7-lobed to below middle with rather narrow sinuses, the lobes narrowly lanceolate to ovate-lanceolate, acute, entire or with 1 or 2 lateral teeth, strongly bristly mucronate, strigose above with forked or few-branched bristles, hirsutulous beneath with sessile or stalked 5–8-rayed stellate hairs, often bristly on veins and margins, the petioles slender, 1–4 cm. long, stellate-hirsute and bristly, dilated into an oval sheath, its margins bearing 3–8 pairs of linear, hyaline, acute, entire stipular processes 2–5 mm. long; upper cauline leaves like the basal, only the uppermost sometimes reduced, subsessile, and trilobed; peduncles very slender (to 5 cm.) to abortive, usually paired in middle and upper leaf axils, the umbels 2–5-flowered; involucre of an inconspicuous tuft of linear stipule-like bracts, or

usually lacking; flowers greenish-white; calyx lobes obsolete; petals oval, about 0.8 mm. long, plane, glabrous, a little narrowed at either end; ovaries rather densely covered with sessile, mostly 8-rayed stellate hairs and stalked glochids; pedicels up to 1 mm. long, or abortive; fruit dark brown, oblong-ovoid, 3–4 mm. long, 1.5–2 mm. broad, more or less 4-angled, a little cordate, the carpels compressed and concave dorsally, their margins inrolled, the commissural face convex, stellate-pubescent on both surfaces with mostly 8-rayed hairs, the margins and dorsal midribs densely armed with prominently stalked, usually shortly 8–12-rayed "coprinoid" glochids, the stalks up to 1 or 1.5 mm. long.—F.M. Neg. 3417.

"Canruru, Andes Peruviénne," *Savatier*. "Peru," *Wilkes Expedition*. Ancash: Pr. Cajatambo: prope Ocros, 3200–2400 m., *Weberbauer 2659*, type.—Lima: Pr. Huarochirí: Río Blanco, 3000–3500 m., *Killip & Smith 21641;* "ex regione media Andium Peruviae, in convalle fluminis *Rimac*, 6–11000′ s. m.," *Ball;* "ex saxosis Andium Peruviae juxta pagum *Chicla*, 12–13000′ s. m.," *Ball*, type of *B. lobata* var. *chiclensis;* valley of Río Rimac, near Lima-Oroya highway at km. 70 east of Lima, alt. 1850 m., *Goodspeed 33126;* Infiernillo, entre San Mateo i Río Blanco, carretera Lima-Huancayo, 3300–3350 m., *Ferreyra 7006*, in part.

Southern Ecuador to central Peru, at elevations of 1850 to 3500 meters.

Bowlesia sodiroana Wolff, Bot. Jahrb. 40: Beih. 91: 49. 1907. *Bowlesia* sp. Muñoz, Sinop. Fl. Chil. *pl. 191*. 1959.

Annual, prostrate or ascending or subscandent, 0.5–6 dm. long, dichotomously branched from a slender taproot, the stems slender, scabrous with short-stalked or sessile, mostly 4- (occasionally 5-, 6-, or 8-) rayed stellate scales, the young foliage and inflorescence white-hirsute with simple and stellate hairs; lower leaves alternate, the upper opposite, petiolate, thinly membranaceous, the basal and lower cauline ovate to orbicular-reniform, 1–4 cm. long, 1.5–5.5 cm. broad, cordate, palmately 3-, 5-, or 7-lobed very shallowly or to well below middle, the lobes ovate to lanceolate, acute to acuminate, subequal or the terminal elongate, coarsely toothed or shallowly lobed to entire, bristly mucronate, strigose above with large, simple or distally forked barbellate trichomes and sometimes a few smaller 2–4-forked hairs, hirsute or hirsutulous beneath with short-stalked, usually 4- (sometimes 6- or 8-) rayed stellate hairs, with some giant trichomes on veins, the petioles slender, 1–7 cm. long, bristly at summit, dilated

into an oval sheath, its margins bearing 3–8 pairs of linear-lanceolate to linear-filiform, hyaline, acuminate, fimbriate, stipular processes 1–4 mm. long; uppermost cauline leaves narrower, shorter petiolate, and often 3-lobed; peduncles weak, usually paired in axils, 1–5 cm. long, the umbels usually 1–5-flowered, usually one umbel solitary and often subsessile in axils; involucre apparently lacking; flowers greenish-white or purplish; calyx lobes obsolete; petals ovate, 0.5–0.6 mm. long, plane, glabrous, a little narrowed at either end; ovaries sparsely stellate-pubescent and glochidiate; pedicels to 0.5 mm. long, hirsute at apex, spreading; fruit ovoid, 2.5 mm. long, 1.5–2 mm. broad, 4-winged, rounded at apex, a little cordate, the carpels flattened dorsally, concave dorsally, the margins a little inrolled, the commissural face convex, stellate and papillate with sessile 8-rayed hairs on both surfaces, the ribs armed with very slender, stalked, "coprinoid," 8–12-rayed glochids up to 1 mm. long, their rays sharply reflexed.

Ancash: Pr. Bolognesi: Cerro al SE de Chiquián, 3500 m., *Cerrate 521, 523*, 3500–3600 m., *Ferreyra 7323*.—Arequipa: Pr. Arequipa: quebrada de San Lázaro, near Arequipa, 9100 ft., *Munz 15506;* Arequipa, 8–10,000 ft., *Stafford 36, Pennell 13209;* Volcán de Misti, 3300–3400 m., *Pennell 13224;* Chiquata, 3250–3400 m., *Vargas 9441a;* Chacani, 11,000 ft., *Stafford 617A;* Pr. Islay, 10 km. east of Islay, 300 m., *Worth & Morrison 15714;* cerca a la pampa la Joya, arriba de Mollendo, 500 m., *Ferreyra 6426*. Pr. Caravelí: Lomas de Capas (Chala), ca. 200 m., *Velarde 181*.—Ayacucho: Pampalca, between Huanta and Río Apurimac, 3200 m., *Killip & Smith 22260*.—Cusco: Pr. Cusco: Cusco, 3000–3600 m., *Herrera*.—Lima: Pr. Canta: Obrajillo, *Wilkes Expedition*. Pr. Huarochirí: Chicre cerro al N. de Huarochirí, 3700 m., *Cerrate & Tovar 1817;* Infiernillo, entre San Mateo i Río Blanco, carretera Lima-Huancayo, 3300–3350 m., *Ferreyra 7006* in part; Chicla, 12,000–13,000 ft., *Ball;* Huamantanga, *Mathews 491;* Matucana, ca. 8000 ft., *Macbride & Featherstone 407, 121*.

Ecuador to southern Peru, 2000 to 4000 meters, and in coastal Arequipa at 200 to 500 meters; also in Chile and in Mexico.

Bowlesia tenella Meyen, Reise 1: 466. 1834. *B. lobata* var. *humifusa* Ball, Jour. Linn. Soc. Bot. 22: 40. 1885; *B. mandoni* Rusby, Mem. Torrey Club 3: 41. 1893.

Annual, prostrate to ascending, 0.5–3.5 dm. long, dichotomously branched from a slender taproot, the stems filiform, sparsely pubescent with sessile or subsessile, very slender and mostly 4-rayed stel-

late hairs, or quite glabrate, the young foliage and inflorescence stellate-hirsutulous; leaves mostly alternate, petiolate, thinly membranaceous, the basal and lower cauline orbicular-reniform, 0.8–2.2 cm. long, 1–3 cm. broad, cordate, palmately 5- or 7-lobed about to the middle, with narrow sinuses, the lobes ovate, acute or obtuse, subequal, mostly entire (or with 1 or 2 lateral teeth), weakly mucronate, strigulose above with simple or 2–3-forked hairs, hirsutulous beneath with sessile or subsessile, 3–5-rayed stellate hairs, bristly on veins, the petioles very slender, 1.5–5 cm. long, stellate-hirsute, dilated into an oval sheath, its margins bearing 2–4 pairs of linear to linear-lanceolate, hyaline, acute or acuminate, fimbriate, stipular processes, 1–2 mm. long; upper cauline leaves reduced, but like the basal; peduncles obsolete, the umbels usually 1–3-flowered, short-pedicellate to subsessile in leaf axils of main stem or on filiform axillary shoots (which appear like peduncles); involucre lacking, but the stipular processes and pedicel hairs often forming a concealing semi-involucre; flowers yellowish-white; calyx obsolete; petals oval, 0.2–0.4 mm. long, plane, glabrous, a little narrowed at either end; ovaries glochidiate-roughened; pedicels up to 3 mm. long, hirsute, spreading; fruit ovoid, 2–3 mm. long, 1–1.5 mm. broad, obtuse at apex, a little cordate, 4-winged, the carpels (always?) dimorphic, strongly flattened dorsally, plane to strongly concave dorsally, the commissural face convex, either sparsely to densely glochidiate-stellate on both surfaces and between ribs, or one carpel quite naked, the other armed with sessile or stalked, mostly 8-rayed "coprinoid" glochids, the stalks unequal, less than 0.5 mm. long.—F.M. Neg. 3418.

"Andes peruviénnes," *Savatier*.—Junín: Pr. Junín: Hondores cerca a la laguna de Junín, 4200–4300 m., *Ferreyra 5278*.—Lima: Pr. Huarochirí: "ex saxosis Andium Peruviae juxta pagum *Chicla*, 12–13000′ s. m.," *Ball*, type of *B. lobata* var. *humifusa*.—Puno: Cordillera de Puno, *Lechler 1701*. St. Gavan, *Lechler 2665*. Pr. Huancané: Conima, 3900 m., *Aguilar*. Pr. Puno: Isla Amantani, 3900 m., *Aguilar*.—Tacna: Cordillera de Tacna, 3–4000 ft., *Meyen;* "Laguna de Titicaca," *Meyen*.

Rocky places at altitudes of 3400 to 4300 meters, in the Andes of Peru and Bolivia.

Bowlesia tropaeolifolia Gillies & Hook. Bot. Misc. 1: 325. 1830. *B. flexilis* Meyen, Reise 1: 348. 1834. *B. pulchella* Wedd. Chlor. And. 2: 188, *pl. 67B*. 1860. *B. cirrosa* Phil. Anal. Univ. Chil. 85: 515. 1894. *B. tropaeolifolia* var. *cirrosa* Reiche, Anal. Univ. Chil.

104: 783. 1899. *B. tropaeolifolia* var. *heterophylla* Speg. Anal. Mus. Nac. Buenos Aires 7: 294. 1902. *B. tropaeolifolia* var. *patagonica* Speg. l.c. *B. tropaeolifolia* var. *gayana* Domin, Repert. Sp. Nov. 4: 299. 1907. *B. rupestris* Wolff, Bot. Jahrb. 40: 286. 1908.

Perennial, 0.5–12 dm. high or long, prostrate or half-climbing to low and "bushy," dichotomously branched from a multicipital caudex terminating in a stout, woody, vertical taproot, the stems densely to sparsely pubescent with sessile or short-stalked 4–8-rayed stellate hairs, or glabrate, the young foliage and inflorescence white- or grayish-pannose, -tomentose, or merely -hirsutulose, with stellate hairs; leaves loosely clustered toward base, alternate below, opposite above, membranaceous but thickish, orbicular-reniform, 0.5–3.5 cm. long, 0.7–4.5 cm. broad, cordate, with a broad to narrow sinus, palmately 5-, 7-, or 9-lobed, usually about to the middle, the lobes ovate to linear-lanceolate, subequal (or the terminal rarely a little elongate), generally broadest near the middle, all usually entire, weakly bristly mucronulate, green but strigose to hirsute above with appressed or ascending, mostly 2–5-rayed, stalked hairs, or glabrate, white-pannose or -tomentose beneath at least when young, with stalked 5–8-rayed hairs; petioles slender, 1–16 cm. long, dilated into an oval sheath, its margin bearing 2–5 pairs of linear to ovate-lanceolate, hyaline, acute, fimbriate to lacerate stipular processes 0.5–3 mm. long; upper cauline leaves somewhat reduced and shorter-petiolate, often 3-lobed or even entire; peduncles weak to stout, short to very slender, 0.5–5 (–10) cm. long; involucre of several stipule-like linear to lanceolate hyaline bracts, these often somewhat obscured by the stellate indumentum; flowers yellowish- or greenish-white (rarely rose-tinged or purplish); calyx lobes linear-lanceolate, scarious, fimbriate, 0.5–0.8 mm. long, somewhat persistent, reflexed, shorter than petals; petals ovate to oblong, 1–1.5 mm. long, plane, usually stellate-pubescent on back, a little narrowed at either end; ovaries white, stellate-pannose or -tomentose; pedicels 0.5–2 mm. long, to abortive, spreading; fruit ovoid, 1–3 mm. long, 1.5–2.5 mm. broad, more or less 2- or 4-winged, narrowed at apex, a little cordate, the carpels strongly flattened dorsally, plane to strongly concave dorsally, the commissural face convex, densely to sparsely stellate-pubescent on both surfaces with 8- or 6-rayed sessile hairs.—F.M. Negs. 3407, 3416, 37062.

Illustration: Reiche, Bot. Jahrb. 28: *pl. 1, f. 4.* 1889 (fruit section).

Arequipa: Pr. Arequipa: Chacani, 11000 ft., *Stafford 617;* Salinas, above Arequipa, 4500 m., *Rauh 619;* Cordillera between Cotahuasi

and Cailloma, 4500–4600 m., *Weberbauer 6884.*—Cusco: Pr. Quispicanchis: Ccateca, Kauri, 3900 m., *Vargas 918.*—Huancavelica: Pr. Castro-Virreyna: high Andes between Pisco and Ayacucho, Sta. Inés, 4600–4700 m., *Weberbauer 5430.*—Junín: Pr. Yauli: Tunel Mar (Jauli), 4000 m., *Velarde 1957.* Pr. Junín: Juampacucha, 4500 m., *Aguilar.*—Lima: Pr. Canta: Huamantanga, *Mathews 503.* Pr. Huarochirí: "An d. Lima-Oroya Bahn, Chicla, 3720 m.," *Weberbauer 231,* type of *B. rupestris* Wolff.—Moquegua: Saylapa, near Carumas, 3600–3700 m., *Weberbauer 7349.*—Pasco: Pr. Pasco: Cerro de Pasco, ca. 4300 m., *Asplund 11842.*—Puno: Pr. Puno: hills back of Puno, 3152 m., *Shepard 142;* alrededores de Puno, 3900 m., *Aguilar 88;* south-facing, under rocks in stony slides, km. 4 north of Puno on road to Juliaca, overlooking Puno, 3800 m., *Hutchison 1820;* Isla Estebes, *Vargas 118;* Salcedo, *Soukup 957;* Tiquillaca, 13,000 ft., *Stafford 1213;* Sta. Lucía, *Sharpe 59.*—Tacna: Chulunquaicum, Cordillera de Tacora, *Weddell,* type of *B. pulchella* Wedd.

High Andes of Peru, southward through Bolivia, Chile, and cordilleran Argentina to Fuegia and Patagonia, at altitudes of 2000 to 4700 meters at the north to less than 100 meters at the extreme south.

CONIUM L.

Slender, erect, herbaceous, caulescent, branching, glabrous biennials, the stems spotted, from stout taproots. Leaves petiolate, membranaceous, pinnately decompound, the leaflets pinnately incised. Petioles sheathing. Inflorescence a compound dichasium of loose compound umbels; peduncles terminal and axillary. Involucre of numerous, inconspicuous, lanceolate bracts. Rays numerous, spreading-ascending. Involucel of numerous bractlets like the bracts, shorter than pedicels. Pedicels spreading. Flowers white; petals obovate or cuneate with a narrower inflexed apex; calyx teeth obsolete; styles reflexed, the stylopodium depressed-conic. Carpophore entire. Fruit broadly ovoid, compressed laterally, glabrous; ribs prominent, obtuse, undulate, crenate; vittae very small and numerous, irregular; seed terete in transection, the face deeply and narrowly sulcate.

A genus of two species, one native of Eurasia, the other South African.

Conium maculatum L. Sp. Pl. 243. 1753. *Cicuta officinalis* Crantz, Class. Umbell. 98. 1767. *Coriandrum cicuta* Crantz, Stirp.

Austr. 3: 100. 1767. *Conium cicuta* Neck. Delic. 142. 1768. *Cicuta major* Lam. Fl. Fr. 3: 456. 1778. *Coriandrum maculatum* Roth, Fl. Germ. 1: 130. 1788. *Conium maculosum* Pall. Reise Südl. Statth. 1: 478. 1799. *Sium conium* Vest, Man. Bot. 513. 1806. *Selinum conium* Krause in Sturm, Fl. Deutsch. ed. 2. 12: 79. 1904.

Plants 5–30 dm. high; leaf blades broadly ovate, 1.5–3 dm. long, 5–30 cm. broad, pinnately decompound into pinnately incised segments; petioles dilated; involucre of ovate-acuminate, short bracts; rays 15–25 mm. long, subequal; involucel of bractlets like the bracts, with a conspicuous midrib; pedicels 4–6 mm. long; fruit 2–2.5 mm. long, about 2 mm. broad, the ribs very prominent in the dry fruit.

Illustrations: Engl. & Prantl, Pflanzenf. 3 (8): 168. 1898 (fruit). Reichenb. Ic. Fl. Germ. 21: *pl. 2032.* 1867. Sturm, Fl. Deutsch. ed. 2. 12: *pl. 38.* 1904.

Ancash: Pr. Bolognesi: alrededores de Aquia, 3400 m., *Ferreyra 12161.*—Arequipa: Pr. Arequipa: cerca del Río Chile, borde de acequia, 2200 m., *Angulo 1786.*—Cusco: Pr. Cusco: cerro Sape, cerca a la ciudad de Cusco, 3400 m., *Ferreyra 2669;* Cusco, 3200 m., *Herrera 308, Soukup 55;* Cerro Picchu cerca al Cusco, 3500–3700 m., *Ferreyra 9844.*—Huancavelica: Pr. Huancavelica: roadside weed, canyon of the Río Mantaro north of Mejorada, km. 372 from Lima on Abancay-Huancayo Road, 2950 m., *Hutchison 1670.*— Huánuco: Pr. Dos de Mayo: on previously cultivated land, 2700 m., *Woytkowski 82;* Chavinilla, alrededores del pueblo, 3400 m., *Woytkowski 1013.*—Junín: Pr. Jauja: Concepción, valle del Mantaro, borde de chacra, 3200–3300 m., *Ferreyra 12911;* alrededores de Jauja, 3300 m., *Ridoutt 891;* Valle de Concepción, *Hood.* Pr. Tarma: alrededores de Tarma, 3200 m., *Esposto,* 3150 m., *López 789;* Acobamba, abajo de Tarma, 2900 m., *Aguilar 528;* cerca a Cochas, entre Tarma y La Oroya, 3500–3600 m., *Ferreyra 11427;* entre Tarma y Oroya, subiendo de Tarma a la cumbre, 3300–3500 m., *Ferreyra 3795;* Tarma, 3000–3200 m., *Killip & Smith 21882.* Pr. Huancayo: cerca a Huancayo, *Chávez;* alrededores de Huancayo, 3317 m., *Soukup 2012;* Huancayo, 3317 m., *Soukup 3551.*—Lima: Pr. Huarochirí: Llucanchi abajo de Huarochirí, 3350 m., *Cerrate & Tovar 1759.*—Puno: Pr. Huancané: Conima, 3900 m., *Aguilar.*

Locally known as *culantrillo, cicuta,* and *cicuta-asna-acha;* and common along roadsides in many parts of Peru. Introduced from Europe, widespread as a weed in moist places in North and South America. Poisonous, the poison hemlock of the Greeks.

CORIANDRUM L.

Slender, erect, herbaceous, caulescent, glabrous annuals, from slender taproots. Leaves petiolate, membranaceous, pinnately dissected. Petioles sheathing. Inflorescence of loose compound umbels. Peduncles terminal and lateral. Involucre usually wanting. Rays few, spreading-ascending. Involucel of a few small, narrow bractlets. Pedicels spreading. Flowers white or rose; petals oblong with a narrower inflexed apex, the outer usually radiant; calyx teeth prominent, acute, often unequal; styles slender, spreading, the stylopodium conic. Carpophore 2-parted to base. Fruit orbicular, terete, with a hard pericarp, glabrous, the carpels boat-shaped, not separating readily at maturity; primary ribs filiform, the secondary filiform or obscure; vittae absent; seed flattened dorsally in transection, the face concave.

A genus of two species of the warm temperate and subtropical regions of the Old World.

Coriandrum sativum L. Sp. Pl. 256. 1753. *Selinum coriandrum* Krause in Sturm, Fl. Deutsch. ed. 2. 12: 163. 1904.

Plants 2–7 dm. high; basal leaves ovate, the blades 3–15 cm. long, 2–10 cm. broad, simple and ternately or pinnately lobed, or pinnate, the leaflets flabelliform, cuneate at base, 1–2 cm. long, 0.5–1 cm. broad, variously toothed or incised; petioles 2–15 cm. long; cauline leaves pinnately dissected, the leaflets linear to filiform, 2–15 mm. long, 0.5–1.5 mm. broad, obtuse, entire; peduncles 3–10 cm. long, occasionally abortive; involucre usually wanting; rays 2–8, 1–2.5 cm. long; involucel dimidiate, of a few linear bractlets, 2–4 mm. long; pedicels 2–5 mm. long; calyx teeth ovate-lanceolate, unequal, the outer up to 1 mm. long; petals white or rose, the outer radiant; fruit 1.5–5 mm. in diameter.

Illustrations: Reichenb. Ic. Fl. Germ. 21: *pl. 2043*. 1867. Engl. & Prantl, Pflanzenf. 3 (8): 159. 1898, fl., frt. Hegi, Ill. Fl. Mitt.-Eur. 5 (2): *pl. 194, f. 2*. 1926.

Ica: Pr. Ica: Ica, terrenos de cultivo, 300 m., *Herb. San Marcos.* —Junín: Pr. Tarma: Coyllarbamba, cerca de Acobamba, 2200 m., *Ochoa 184;* Tarma, 3000–3200 m., *Killip & Smith 21915*. Pr. Huancayo: cultivado, 3200 m., *Chávez.*—Lima: Pr. Lima: Otero, Rimac, Lima, terrenos cultivados, 157 m., *Ridoutt 887.*—Loreto: Pr. Maynas: La Victoria on the Amazon River, *Williams 2790;* Caballo-Cocha on the Amazon River, *Williams 2394;* Paraíso, Alto Río Itaya,

145 m., *Williams 3279*.—San Martín: Pr. Lamas: Roque, banana plantation, *Melin 293*.

The coriander of commerce, native of the Mediterranean region and widely adventive in the western hemisphere. Locally known as *culandra* and *culandro*.

DAUCUS L.

Carota Rupr. Fl. Ingr. 466. 1860.

Low or tall, erect, herbaceous, caulescent, branching, pubescent annuals or biennials, from taproots. Leaves petiolate, membranaceous, pinnately decompound, the leaflets small and narrow. Petioles sheathing. Inflorescence of loose compound umbels, or subcompact by incurving of the rays after anthesis; peduncles terminal and axillary. Involucre of numerous dissected or entire bracts, or wanting. Rays few to numerous, spreading or the outer often connivent over the short inner ones. Involucel of numerous toothed or entire bractlets, or wanting. Pedicels spreading, unequal. Flowers white, or the central flower of each umbellet purple, or rarely all reddish, pinkish, or yellow; petals obcordate, unequally cleft, with a narrower inflexed apex, the outer often radiant; calyx teeth obsolete to evident; styles short, the stylopodium conic. Carpophore entire or bifid at apex. Fruit oblong to ovoid, compressed dorsally; primary ribs filiform, bristly; secondary ribs winged, the wings divided into a single row of barbed or glochidiate prickles; vittae solitary under the secondary ribs, 2 on the commissure; seed flattened dorsally in transection, the face shallowly concave to nearly plane.

A genus of about 25 species of wide distribution.

Fruiting umbels many-rayed, compact in fruit by incurving of the outer rays ..... *D. carota.*

Fruiting umbels few-rayed, open in fruit, the rays spreading-ascending ..... *D. montanus.*

Daucus carota L. Sp. Pl. 242. 1753. *Caucalis carota* Crantz, Class. Umbell. 113. 1767. *C. daucus* Crantz, Stirp. Austr. 3: 125. 1767. *Carota sativa* Rupr. Fl. Ingr. 468. 1860.

Plants biennial, 1.5–12 dm. high, the stems solitary, glabrous to retrorsely hispid; leaf blades oblong, 5–15 cm. long, 2–7 cm. broad, the leaflets linear to lanceolate, 2–12 mm. long, 0.5–2 mm. broad, acute, mucronate, entire or few-cleft, glabrous to hispid especially

on veins and margins; petioles 3–10 cm. long; divisions of cauline leaves often elongate; peduncles 2.5–6 dm. long, retrorsely hispid; involucre of filiform, elongate, pinnately divided or rarely entire, scarious-margined bracts, 3–30 mm. long, usually reflexed; rays numerous, unequal, 3–7.5 cm. long, compact in fruit; involucel of linear, acuminate, entire or rarely pinnate, more or less scarious, ciliate bractlets, equaling or exceeding the flowers; pedicels unequal, 3–10 mm. long; flowers white, yellow or pinkish, the central flower of each umbellet usually purple or pinkish; fruit ovoid, 3–4 mm. long, about 2 mm. broad, broadest at middle.

Illustrations: Reichenb. Ic. Fl. Germ. 21: *pl. 2000.* 1867. Bailey, St. Cycl. Hort. 674, 675. 1922.

Lima: Pr. Lima: cercanías de Lima, *Isern* (*Cuatrecasas 2465*).

The cultivated carrot, native of Europe, adventive throughout the western hemisphere.

Daucus montanus Humb. & Bonpl. ex Spreng. in R. & S. Syst. Veg. 6: 482. 1820. *D. toriloides* DC. Prodr. 4: 214. 1830. *Torilis peruviana* Presl in DC. Prodr. 4: 214. 1830, in synon. *Daucus australis* Poepp. in DC. l.c.

Plants annual (or biennial?), 1.2–10 dm. high, the stems usually solitary, erect, simple or few-branched, papillate-hispid with mostly retrorse hairs to glabrate; leaf blades oblong, 3.5–11 cm. long, 2.5–5 cm. broad, the leaflets linear, 2–5 mm. long, about 1 mm. broad, acute, more or less hispid; petioles 3–12 cm. long; peduncles 4.5–25 cm. long, retrorsely papillate-hispid; involucre of foliaceous, pinnately decompound bracts, the divisions short, linear; rays 4–20, unequal, spreading, 1.5–12 cm. long; involucel of a few linear, acute bractlets shorter than pedicels; pedicels unequal, 3–20 mm. long; flowers whitish, greenish, yellowish, pink, or red-purple; fruit oblong, 3–6 mm. long, 2–3 mm. broad, the commissural surface with 2 rows of hispidulous hairs.

Illustrations: Saunders, Refug. Bot. 5: *pl. 299.* 1873.

Ancash: Pr. Bolognesi: Mahuay, 4300 m., *Cerrate 2221;* Distr. de Huasta, 3800 m., *Cerrate 2521.* Pr. Huaráz: gravelly soil between rocks, Cerro Shaurema, southeast of Huaráz, 3200–3300 m., *Pennell 15290.*—Apurimac: Pr. Abancay: Ampuy, 3200 m., *Stork, Horton & Vargas 10610;* Quera, Lambrana, 3050 m., *Vargas 1958;* Abancay, *Banco de Fomento Agropecuario 103.*—Arequipa: Pr. Islay: near Mollendo, 250 m., *Hutchison 1861a.*—Cusco: Pr. Urubamba: Machu

Picchu, 1800 m., *Velarde 1113;* Machu Picchu Station, *Hutchison 1763;* ruins of Machu Picchu, *Hutchison 1764, Mathias 3676.* Pr. Cusco: ruinas de Sacsayhuaman, cerca a la ciudad de Cusco, 3400–3500 m., *Asplund 2637, Ferreyra 2637,* 3600 m., *Vargas 1179;* Cusco, *Rauh & Hirsch 718, Herrera 3158, 2401.* Pr. Paucartambo: laderas de Paucartambo, arcillo-pedregoso, 3400 m., *Vargas 911.* Pr. Calca: Calca, *Vargas 3888.* Pr. Anta: Cordillera Salcantay, Pampa Soray, 4000 m., *Rauh 1495.*—Huancavelica: Pr. Tayacaja: entre Colcabamba y Paucarbamba, 2800 m., *Tovar 2059.* Pr. Huancavelica: abajo de Huando, 3300 m., *Tovar 1222;* west of and above Huando, road to Huancavelica, ca. 5 km. before (above) bridge over Río Palca, 3650 m., *Hutchison 1678.*—Huánuco: Pr. Huánuco: open grassy banks, 15 mi. southeast of Huánuco, 10,500 ft., *Macbride & Featherstone 2119;* Mito, 9000 ft., *Macbride & Featherstone 1737;* Pillao, 2700 m., *Woytkowski 105, 34105, 35105;* roadside, about 1 km. above Chinchao, *Mathias 5163;* Carpish, cumbre entre Huánuco y Tingo María, 2700–2800 m., *Ferreyra 10017;* Carpish, slope towards Huánuco, 2750 m., *Asplund 13097;* Mitotambo arriba de Mito, 3200–3300 m., *Ferreyra 10358;* Hda. Paty, abajo de Carpish, 1700–1800 m., *Ferreyra 9388;* Cuchero, *Poeppig 1292;* Peruvia subandina, locis cultis ad Cuchero, *Poeppig 1292.* Pr. Dos de Mayo: Chavinillo, 3600 m., *Woytkowski 1042,* 3400 m., *Woytkowski 837.*—Junín: Pr. Tarma: entre Palca y Huacapistana, 2800 m., *Ferreyra 11009;* Huacapistana, entre Tarma y San Ramón, margen izq. del Río Tarma, 1800–1900 m., *Ferreyra 479a;* Tarma, debajo de Huacapistana, cerca al puente 1½ km., 1700–1800 m., *Ferreyra 11206;* entre Tarma y Oroya, 3600 m., *Constance & Tovar 2360;* San Juan, cerca a Huacapistana, entre Tarma y San Ramón, 2200–2300 m., *Ferreyra 11317;* 1800–1900 m., *Ferreyra 11248;* Huacapistana, 1800–2400 m., *Killip & Smith 24134;* Valley of the Huasahuasi, *Hutchison 1110;* mouth of gorge, lower end of Huasahuasi Valley, *Hutchison 1140;* Chanchamayo Valley, above La Merced at Cumbre Yacunay near summit, 2500 m., *Hutchison 1182.* Pr. Huancayo: agua de las Vírgenes, cerca a Huancayo, 3270–3300 m., *Tovar 329.* Pr. Yauli: Oroya near Lima, 10–13,000 ft., *Kalenborn 62;* alrededores de Yauli-Hca., 3500–3600 m., *Tovar 3021.*—La Libertad: Pr. Bolívar: arriba de Longotea, 3000 m., *López & Sagástegui 3179.* Pr. Trujillo: lomas del Cerro Campana, 600 m., *Angulo & López 2029.*—Lambayeque: Pr. Lambayeque: border depts. Lambayeque & Piura, abra Porculla Pass on Olmos-Marañon Highway, 1650 m., *Hutchison 1380.*—Lima: Pr. Huarochirí: Chicla, 3700 m., *Asplund 11325;* on Lima-Oroya Hwy. above

Río Blanco, 3600 m., *Hutchison 1659;* Río Blanco, about 12,000 ft., *Macbride & Featherstone 671.* Pr. Lima: Lomas de Lurín, al sur de Lima, 350–400 m., *Ferreyra 11912;* Lomas de Atocongo, 200–300 m., *Ferreyra 11993.* Pr. Canta: Antaicocha, Cerro Colorado, east of Canta, 3500–3600 m., *Pennell 14628.*—Piura: Pr. Huancabamba: arriba de Palambla, 1500–1600 m., *Ferreyra, Cerrate & Tovar 10841.* —San Martín: Pr. Mariscal Cáceres: on road to Divisória, 59 km. from Tingo María on highway to Pucallpa, 1540 m., *Allard 21307;* La Divisória, *Mathias 3511.* Pr. Lamas: San Roque, 1350–1500 m., *Williams 7129.*—Without locality: *Haenke.*

A weedy native, with odor of parsley, widespread in western South America from Chile to Colombia, extending north to Sonora.

DOMEYKOA Phil.

Reference: Math. & Const. A revision of *Asteriscium* and some related hydrocotyloid Umbelliferae, Univ. Calif. Publ. Bot. 33: 99–184. 1962.

Prostrate or spreading, fleshy annual or woody-based perennial herbs, caulescent, dichotomously branched with flexuous, terete branches, glabrous and glaucous. Leaves petiolate, membranaceous, simple, lobed, or 1–3-ternate or -pinnate, palmately, ternately, or pinnately veined; cauline leaves opposite, alternate, or weakly fascicled, petiolate to sessile, or sessile and conspicuously clasping to perfoliate. Petioles sheathing at base. Inflorescence of simple, few- to many-flowered globose umbels. Peduncles solitary in or opposite upper leaf axils, or umbellately clustered in terminal groups of 2–7, sometimes obsolete. Involucre of several linear-lanceolate or orbicular, free or partially connate bracts, usually equaling to longer than pedicels. Flowers white, yellowish, or purple; calyx lobes evident, ovate to obovate, entire or trifid; petals broadly ovate to obovate, acutish, plane or a little incurved, or very shortly inflexed at apex, stipitate to subsessile, the dorsal gland evident; styles short to moderately long, the stylopodium depressed to low-conic. Carpophore wanting. Pedicels short. Fruit orbicular to oval, subtetragonal, truncate at apex, more or less constricted at the commissure and compressed laterally, glabrous, the mature carpels cuneate-rectangular in transection, about as broad as long, with plane sides, plane or very weakly concave dorsally, the margins prominent but unwinged, the commissural face intrusively sulcate, the ribs filiform; vittae small, solitary under the ribs; a thin woody endocarp surrounding the seed cavity.

A genus of about four species, endemic to Peru and northern Chile, confined to the coastal slope.

Basal leaves repandly spinulose-dentate; flowers yellowish-white; calyx lobes about 0.5 mm. long, often conspicuously 3-fid or 3-lobed; styles 0.8–1 mm. long.....*D. amplexicaulis.*

Basal leaves deeply 3- or 5-lobed or parted; flowers usually purplish or rose-colored; calyx lobes obscure, up to 0.3 mm. long, entire; styles about 0.5 mm. long.....*D. saniculifolia.*

Domeykoa amplexicaulis (Wolff) Math. & Const. Univ. Calif. Publ. Bot. 33: 175, *f. 34.* 1962. *Astericium amplexicaulis* Wolff, Bot. Jahrb. 40: 289. 1908.

Slender, prostrate or spreading annual herbs, the branches 1–10 dm. long, striate; leaves somewhat rosulate at base, orbicular to obovate, 0.9–3.5 cm. long, 1.2–5.0 cm. broad, a little cuneate, repandly spinulose-dentate; petiole 1–4 cm. long, weakly dilated and narrowly scarious-margined; cauline leaves prominent, alternate, sessile, conspicuously cordate-clasping or perfoliate, repandly spinulose-dentate; peduncles mostly umbellately clustered in terminal groups of 2–4, a few solitary in upper axils, spreading-ascending, 0.5–4 cm. long, each group or solitary peduncle subtended by a disc-shaped perfoliate leaf or bract; umbels compact, 3–8 mm. in diameter, with usually 15–40 flowers; bracts 5–8, obovate to narrowly oblanceolate, 1–4 mm. long, 1–3 mm. broad, often imbricate, somewhat connate, conspicuously lacerate at apex; flowers yellowish-white; calyx lobes oval to obovate, 0.5 mm. long, deeply 3-fid or -lobed, or rarely entire, conspicuously shorter than petals; petals spatulate-obovate, 0.7–1 mm. long, abruptly acuminate, the short apex slightly incurved to inflexed, conspicuously stipitate; stylopodium low-conic, shorter than the slender, spreading styles; pedicels stout, 1–1.5 mm. long, spreading-ascending; fruit orbicular or oval, ca. 1.5 mm. long, 1.25–1.5 mm. broad, sharply angled, the carpels slightly concave dorsally.—F.M. Neg. 3465.

Arequipa: Pr. Caravelí: Atico, entre Chala y Camaná, 100–200 m., *Ferreyra 12489*, 100 m., *Ferreyra 11540;* Atico, entre Chala y Ocoña, 50–100 m., *Ferreyra 11944*, 50–100 m., *Ferreyra 12010;* ca. 5 km. south of Atico, km. 730 south of Lima on Pan American Highway, 200 m., *Hutchison 1869;* Lomas de Atiquipa, 400 m., *Velarde 4549a.* Pr. Islay: Mollendo, dry sandy slope just above sea

level, *Stafford 805;* Tambo prope Mollendo, 300–600 m., *Weberbauer 1560,* type.

Lomas, Arequipa at elevations of 50 to 600 meters.

Domeykoa saniculifolia Math. & Const. Univ. Calif. Publ. Bot. 33: 179, *f. 35.* 1962.

Rather slender, prostrate or ascending, annual(?) or weakly perennial herb, the branches 1–3 dm. long, faintly ribbed; leaves somewhat rosulate at base, orbicular to obovate, 0.6–2 cm. long, 0.8–2.2 cm. broad, cuneate, deeply 3- or 5-lobed or -parted, the lobes oblanceolate to obovate, coarsely spinulose-dentate; petiole 2–5 cm. long, weakly dilated; cauline leaves prominent, alternate, sessile, oval, conspicuously cordate-amplexicaul, deeply 3–7-lobed or coarsely toothed; peduncles mostly umbellately clustered in terminal groups of 2 or 3, or some solitary in upper axils, spreading-ascending, 0.5–1 cm. long, each group or solitary peduncle subtended by a disc-shaped perfoliate leaf or bract; umbels compact, 5–7 mm. in diameter, with usually 8–15 flowers; bracts 5 or 6, narrowly oblanceolate to orbicular, 2–4 mm. long, 0.5–3 mm. broad, more or less connate below, acute and entire to lacerate at apex; flowers purplish-violet, rose-colored, or rarely greenish-white; calyx lobes broadly triangular, entire, up to 0.3 mm. long, but usually obscure or obsolete; petals ovate, 0.8–1 mm. long, acutish, plane or a little incurved but without a definite inflexed apex, shortly stipitate; stylopodium low-conic, about as long as the short, recurved styles; pedicels stout, 1–1.5 mm. long, angled, spreading-ascending; fruit orbicular, 1–1.5 mm. long and broad, subtetragonal, sharply angled, the carpels slightly concave dorsally.

Arequipa: Pr. Caravelí: Los Cerillos entre Nazca y Chala, 700 m., *Ferreyra 13451;* Los Cerillos, 52 km. al sur de Nazca, 700 m., *Rahn.*—Ica: Pr. Nazca: Lomas de San Nicolás, al sur de Nazca, 800–900 m., *Ferreyra 13395.*—Moquegua: Pr. Mariscal Nieto: Lomas de Ilo, 600–650 m., *Ferreyra 12574;* 4–5 km. north of Ilo on the pampa, 500 m., *Hutchison 483.*—Tacna: Pr. Tacna: Lomas cerca al Morro Sama, 500–600 m., *Ferreyra 12544,* type.

Lomas, Ica to Tacna, at elevations of 500–900 meters.

EREMOCHARIS Phil.

Reference: Math. & Const. A revision of *Asteriscium* and some related hydrocotyloid Umbelliferae, Univ. Calif. Publ. Bot. 33: 99–184. 1962.

Asteriscium sect. *Bustillosia* Benth. & Hook. Gen. Plant. 1: 877. 1867, pro parte; *Asteriscium* subgen. *Bustillosia* Drude in Engl. & Prantl, Pflanzenf. 3 (8): 134. 1897, pro parte. *Asteriscium* subgen. *Gymnophytum* Wolff, Bot. Jahrb. 40: 292–293. 1908, pro parte.

Erect or decumbent, suffrutescent or woody-based perennial herbs, caulescent, dichotomously branched with flexuous or spinescent branches, glabrous and glaucous. Leaves alternate or fascicled, petiolate, membranaceous to fleshy, 1–3 pinnately or ternately divided or lobed, rarely entire, cuspidate, pinnately veined. Petioles obscurely sheathing. Inflorescence of simple, few- to many-flowered globose umbels. Peduncles mostly umbellately clustered in terminal groups of 2–7, some solitary in upper axils. Involucre of several small, lanceolate to ovate, entire bracts shorter than pedicels. Flowers yellow or greenish-white to deep maroon or reddish-violet; calyx lobes evident, ovate-lanceolate to triangular-ovate, usually conspicuously shorter than the petals; petals oval to obovate with a narrower inflexed apex ½ to about as long as the blade, stipitate to subsessile, the dorsal gland conspicuous to evident; styles short to slender, the stylopodium low-conic. Carpophore wanting. Pedicels slender. Fruit oblong-oval to orbicular, subtetragonal, truncate at apex, more or less constricted at the commissure and compressed laterally, glabrous, the mature carpels cuneate-rectangular in transection, about as broad as long with plane sides, plane or very weakly concave dorsally, the commissural face intrusively sulcate, the ribs filiform; vittae small, solitary under the ribs; a thin woody endocarp surrounding the seed cavity.

A genus of nine species, endemic to Peru and northern Chile, and largely confined to the coastal slope.

Leaves all entire, white-margined ..... *E. integrifolia.*

Leaves deeply trilobed to ternately dissected, not evidently margined.

Branches spinescent, the older with exfoliating bark.

Branches ribbed; umbels 10–15 mm. in diameter, 8–20-flowered; filaments 4–5 mm. long, long-exserted ..... *E. hutchisonii.*

Branches striate; umbels 3–10 mm. in diameter, 3–12-flowered; filaments 1.5–2 mm. long, shortly exserted.

Erect, strongly spinescent shrub; leaves prominently fascicled; petals falsely emarginate at point of inflexion; Cusco ..... *E. triradiata.*

Decumbent and weakly spinescent; leaves scarcely fascicled; petals obtuse at point of inflexion; Tacna .... *E. confinis.*

Branches slender and flexuous, not spinescent, without prominently exfoliating bark.

Petal apex much shorter than blade; styles little longer than stylopodium.....*E. ferreyrae.*

Petal apex equaling to surpassing blade; styles markedly longer than stylopodium.

Basal leaves 2–3-ternate, the ultimate divisions filiform. *E. piscoensis.*

Basal leaves 3-lobed or 3-parted, the ultimate divisions linear-lanceolate to orbicular.

Cauline petioles prominently winged; flowers violet. *E. tripartita.*

Cauline petioles unwinged; flowers yellow...*E. longiramea.*

Eremocharis confinis Johnston, Contr. Gray Herb. 85: 173. 1929.

Low, decumbent shrub, 3–4 dm. tall, intricately branched, the branches spinescent, 3–15 cm. long, terete and finely grooved, the older with exfoliating bark; leaves numerous, alternate or weakly fascicled below, fleshy, 2–2.5 cm. long, 0.5–1.2 cm. broad, deltoid, biternate, the primary lobes narrowly spatulate, 3–8 mm. long, 3–5 mm. broad, divaricate, subequal, the ultimate divisions up to 3 mm. long, often mucronate-dentate; petiole linear, 1–2 cm. long, narrowly dilated toward base; cauline leaves little reduced upward, the uppermost trilobed; peduncles in groups of 2–4, spreading-ascending, 0.5–2.5 cm. long, a little attenuate toward apex, each subtended by a lanceolate to oblong leaf 1–2 mm. long; umbels compact, 3–7 mm. in diameter, with usually 3–12 flowers, the bracts 4–7, oblong or lanceolate, mostly obtuse, 1–2 mm. long; flowers greenish-white or deep purple; calyx lobes triangular-acuminate, 0.3–0.5 mm. long, conspicuously shorter than petals; petals orbicular to obovate, about 1.5 mm. long, with a cuneate, inflexed apex about 2/3 length of blade; stylopodium much shorter than the slender, spreading styles; pedicels stout, 1–2 mm. long, spreading; fruit oval, 2 mm. long, 1.5 mm. broad, angled, the carpels slightly concave dorsally, the margins prominent but unwinged.

Illustrations: Math. & Const. Univ. Calif. Publ. Bot. 33: 159, *f. 25.* 1962.

Tacna: Pr. Tarata: Candarave, 2900 m., *Weberbauer 7369*, type; along Tarata-Tacna road midway between the two towns, west side of the pass, 1950 m., *Hutchison 1834.*

Known only from the area of the type collection in "open formation, herbs, rainy green shrubs and *Cereus*."

Eremocharis ferreyrae Math. & Const. Univ. Calif. Publ. Bot. 33: 163, *f. 29*. 1962.

Slender, woody-based perennial herbs, 3–7 dm. tall, the branches slender, ascending, terete, striate, but neither definitely grooved nor ribbed; leaves rather numerous, solitary or very weakly fascicled below, 1.5–3 cm. long and broad, ovate-deltoid, deeply trilobed, the lobes ovate, 5–20 mm. long, 3–15 mm. broad, the central a little larger than the two lateral, all spinose-dentate or -lobed; petiole linear, 3–5 cm. long, only the short oblong sheath slightly dilated; cauline leaves reduced upward, becoming trifid or even entire; peduncles mostly in groups of 3–5, spreading-ascending, 1–4 cm. long, scarcely attenuate at apex, each subtended by a lanceolate to ovate leaf 2–5 mm. long; umbels compact, 4–7 mm. in diameter, with usually 20–30 flowers, the bracts lanceolate, acute, 1–3 mm. long; flowers bright yellow to greenish-white; calyx lobes broadly ovate, about 0.2 mm. long, conspicuously shorter than the petals; petals nearly orbicular, 0.8 mm. long, with a subulate inflexed apex about ½ length of blade; stylopodium a little shorter than the recurved styles; pedicels stout, about 1 mm. long, spreading; fruit orbicular, 1.5 mm. long and broad, sharply angled, the carpels slightly concave dorsally, the margins very narrowly winged.

Arequipa: Pr. Caravelí: Atico, lomas de Atiquipa, 10–20 m., *Ferreyra 6463*, type; Atico, entre Chala y Camaná, 100–200 m., *Ferreyra 12491;* Lomas entre Chala y Atico (La Costañera), 5 m., *Angulo 2574*.

Lomas, Arequipa. Known only from the region of the type locality, at elevations of 5 to 200 meters.

Eremocharis hutchisonii Math. & Const. Univ. Calif. Publ. Bot. 33: 161, *f. 26*. 1962.

Low shrub, 3–10 dm. tall, intricately branched, the branches short, stiff, and somewhat spinescent, angled and prominently ribbed, the older with exfoliating bark; leaves sparse, alternate, weakly fascicled below, 2–3 cm. long, 1.5–2 cm. broad, ovate, 1–2-ternate, the primary lobes oblong-spatulate, 0.5–1.5 cm. long, 0.5 cm. broad, divaricate, subequal, the ultimate divisions 1–3 mm. long, ovate-lanceolate, mucronate; petiole broadly linear, 1–3 cm. long, gradually dilated toward base; cauline leaves little reduced upward, the uppermost trilobed; peduncles in groups of 3–5, many solitary,

spreading, 0.5–2 cm. long, a little attenuate toward the apex, each subtended by an ovate leaf 0.5–2 mm. long; umbels lax, 10–15 mm. in diameter, with usually 8–20 flowers, the bracts about 5, oblong, 1–2 mm. long; flowers purplish-brown; calyx lobes ovate, 0.3–0.5 mm. long, conspicuously shorter than the petals; petals oval, about 1.5 mm. long, with a narrower, inflexed apex of about equal length; stylopodium much shorter than the very slender, spreading styles; pedicels slender, 3–6 mm. long, spreading; fruit oval, 2 mm. long, 1.5 mm. broad, sharply angled, the carpels strongly concave dorsally, the margins prominent.

Arequipa: Pr. Caravelí: Incuyo-Chala, 3300 m., *Hutchison 1277*, type.

Known only from the type collection.

Eremocharis integrifolia Math. & Const. Univ. Calif. Publ. Bot. 33: 171, *f. 32*. 1962.

Low shrub, 3–6 dm. tall, much-branched, the branches slender, ascending, somewhat spinescent, terete but with filiform grooves; leaves fairly numerous, alternate and often fascicled, especially below, the basal and lower cauline 3–4 cm. long, 3–6 mm. broad, narrowly lanceolate, entire, narrowly white-margined, tapering insensibly at base and with no evidently distinct petiole or sheath; cauline leaves reduced upward, but otherwise similar to the basal; peduncles in groups of 2–4, ascending, 1–3 cm. long, conspicuously attenuate at the apex, each subtended by a linear-lanceolate to lanceolate, usually acute leaf 3–12 mm. long, 1–3 mm. broad, often inserted at different levels; umbels lax, 5–8 mm. in diameter, with 3–10 flowers, the bracts lanceolate to oval, obtuse, 0.5–1.5 mm. long; flowers greenish-purple; calyx lobes ovate, acute, about 0.8 mm. long, almost as long as the petals in bud; petals orbicular, about 0.8 mm. long, tapering into a linear-lanceolate inflexed apex about 2/3 as long as the blade; stylopodium much shorter than the slender styles; pedicels 2–3 mm. long, ascending; fruit orbicular, 1.5–2 mm. long and broad, sharply angled, the carpels truncate to slightly concave dorsally, the margins acute.

"Andes Peruviénnes," 1876–1879, *Savatier*.—Lima: Pr. Huarochirí: Matucana, 2400 m., *Asplund 10950*, type; Matucana, about 8000 ft., *Macbride and Featherstone 555*.

Known only from the vicinity of the type locality, at an elevation of 2400 to 2600 meters.

Eremocharis longiramea (Wolff) Johnston, Contr. Gray Herb. 85: 174. 1929. *Asteriscium longirameum* Wolff, Bot. Jahrb. 40: 292. 1908. *Eremocharis dissecta* Johnston, l.c.

Slender subshrub or woody-based perennial herb, 0.5–1.5 m. tall, much-branched above, the branches slender, strictly erect or ascending, terete but with definite filiform ribs; leaves sparse, alternate, the basal 5–7 cm. long, 3–6 cm. broad, ovate-cuneate, biternate, the leaflets cuneate-oblanceolate, subequal, irregularly trilobed, the lobes cuneate to linear-lanceolate, or dentate, 3–5 cm. long, 1–2 cm. broad; petiole linear, 2–3 cm. long, only the very short sheath dilated; cauline leaves reduced upward, becoming deltoid, ternate, and subsessile; peduncles in groups of 2–5, very slender to rather stout, ascending or spreading, mostly 0.5–5.5 cm. long, scarcely attenuate at apex, each subtended by a lanceolate to linear leaf 0.5–7 mm. long; umbels lax, 8–15 mm. in diameter, with usually 6–25 flowers, the bracts lanceolate, 0.5–2 mm. long; flowers yellow to greenish-white; calyx lobes triangular, acuminate, 0.3–0.6 mm. long, conspicuously shorter than the petals; petals orbicular, 0.8–1 mm. long, tapering into a linear-lanceolate inflexed apex of approximately equal length; stylopodium much shorter than the slender, ascending or spreading styles; pedicels slender, 3–5 mm. long, spreading; fruit orbicular, 1.5–2 mm. in diameter, sharply angled, the carpels slightly concave dorsally, the margins acute or narrowly winged.—F.M. Neg. 3457.

Illustrations: Math. & Const. Univ. Calif. Publ. Bot. 33: 166, *f. 30.* 1962.

Ancash: Pr. Huaylas: Caraz, 2200–2500 m., *Weberbauer 2993*, type. Pr. Casma: Lomas de Lupín, entre Barranca y Huarmey, 350–400 m., *Ferreyra 13537, Mathias 3673.* Pr. Huaráz: Casma Valley, 2000–3000 m., *Rauh & Hirsch 2113.* Pr. Yungay: entre Carhuaz y Caraz, 2600–2200 m., *Vargas 10299.*—Cajamarca: Pr. Jaén: 900–2400 m., *Vargas 10454;* between Acapulco and Pucará, 1150 m., *Hutchison 1398;* Puente del Río Huancabamba, entre Pucará y Abra de Porculla, falda rocono con elementos subxerofilos, 1200–1300 m., *Ferreyra 13727;* entre Abra de Porculla y Jaén, 1300–1400 m., *Ferreyra 13634.*—La Libertad: Pr. Otuzco: Laderas del Cerro Chologday, 2640 m., *Angulo 0914;* Plazapampa, 2200 m., *Cevasco "D."* Pr. Trujillo: Cerro Cabezón, 670 m., *Angulo & López 1480;* El Portachuelo, Ascope-San Benito, 900 m., *López 1277.*—Lima: Pr. Canta: along Río Chillón near Viscas, 1800–2000 m., *Pennell 14481.* Pr. Huarochirí: valley of Río Rimac, near Lima-Oroya Highway at km. 60 east of Lima, 1500 m., *Goodspeed & Met-*

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calf 30227; between Matucana & San Bartolomé, *Rose & Rose 18755.* —Piura: Cerro Prieto, above 1200 ft., *Haught F 155.* Pr. Huancabamba: Carretera a Jaén, 1200 m., *Angulo 2103;* Abra Porculla Pass, east side, 1350 m., *Hutchison 1392.* Pr. Paita: Cerro Prieto, La Brea, Amotape Hills, Talara, *Haught 29;* Mount "El Muerto" near La Brea, 700–800 m., Amotape Hills, *Weberbauer 7761,* type of *E. dissecta.*

A brittle nearly leafless herb or subshrub with distinct odor of sweet anise.

Northern to central Peru, mostly on the coastal slope, at elevations of 350 to 2600 meters.

Eremocharis piscoensis Math. & Const. Univ. Calif. Publ. Bot. 33: 161, *f. 28.* 1962.

Slender shrub 1–2 m. tall, the branches slender, terete, many-ribbed, spreading or divergent; leaves alternate, the basal up to 7 cm. long, 5 cm. broad, broadly ovate, triternate, the primary and ultimate divisions linear or filiform, acuminate, divergent, 0.3–3 cm. long, 1 mm. broad or less; petiole linear, 1–2 cm. long, flattened and a little dilated; cauline leaves reduced upward, becoming linear-spatulate and ternate or even entire; peduncles in groups of 2–6, spreading, 0.5–3 cm. long, slightly narrowed toward apex, each subtended by an ovate to lanceolate leaf 1–2 mm. long; umbels lax, 7–10 mm. in diameter, with usually 5–10 flowers, the 4–6 bracts oblong to oval, 1–2 mm. long; flowers purplish-brown; calyx lobes triangular, acute, about 0.6 mm. long, conspicuously shorter than petals; petals orbicular, 1 mm. long with a linear-lanceolate, inflexed apex of approximately equal length or longer; stylopodium much shorter than the very slender, spreading to recurved styles; pedicels slender, 1.5–2.5 mm. long, spreading; fruit orbicular, about 2 mm. long, 1.5–2 mm. broad, sharply angled, the carpels truncate or slightly concave dorsally, the margins acute.

Arequipa: Pr. Camaná: Valley of the Río de Lomas above Acari, 800–900 m., *Weberbauer 5737.*—Huancavelica: Pr. Castrovirreyna: above Pisco, between Pámpano and Huaytará, 1800–2000 m., *Weberbauer 5406;* Huaytará, 6–800 ft., *Pearce.*—Ica: Pr. Pisco: Pisco Valley, 1000–2000 m., *Rauh & Hirsch P400,* type. Lomas cerca a San Nicolás, 550 m., *Rahn.*

Lomas, Arequipa to Ica, at elevations of 550 to 2000 meters.

Eremocharis tripartita (Wolff) Math. & Const. Univ. Calif. Publ. Bot. 33: 169, *f. 31.* 1962. *Asteriscium tripartitum* Wolff, Bot. Jahrb. 40: 293. 1908.

Slender subshrub or woody-based perennial herb 3–10 dm. tall, the branches slender, flexuous, 2–3 dm. long, terete, finely ribbed, spreading-ascending; leaves rather sparse, alternate, 2–3.5 cm. long, 3–5 cm. broad, orbicular to orbicular-reniform, 3-lobed or 3-parted, the lobes cuneate-obovate, 1–2 cm. long, 0.5–1.5 cm. broad, subequal or the lateral narrower, shallowly lobed or dentate; petiole dilated and sheathing to above the middle, 1.5–5 cm. long, the cauline leaves petiolate with a winged petiole, reduced upward; peduncles in groups of 4–7, slender, cylindrical, 1–3 cm. long, each subtended by a linear or lanceolate leaf 2–3 mm. long; umbels lax, 5–15 mm. in diameter, with usually 10–20 flowers, the bracts linear to oval, acuminate or acute, 0.5–1 mm. long; flowers deep maroon to violet; calyx lobes ovate-lanceolate, acute, about 0.5 mm. long, conspicuously shorter than the petals; petals ovate, about 1.5 mm. long, with a linear-lanceolate inflexed apex of nearly equal length; stylopodium much shorter than the very slender styles; pedicels slender, 2–7 mm. long, spreading; fruit orbicular, 1.5–2 mm. in diameter, sharply angled, the carpels slightly concave dorsally, the margins acute.—F.M. Neg. 3455.

Cajamarca: Pr. Chota: bank above Llama, 2300–2400 m., *Pennell 15922;* Llama, 7500 ft., *Sandeman 4098.* Pr. Cajamarca: cerros cerca de Cajamarca, 2500 m., *Velarde 5824a.* Pr. Hualgayoc: bajo de San Miguél, 2200–2300 m., *Weberbauer 3909,* type. Pr. Contumaza: Cerro Chunorrán, Guzmango, 2900 m., *Sagástegui 3385.*

Plants with aromatic, spicy, peppery odor; commonly known as *neldo.*

Known only from the mountains of Cajamarca, at elevations of 2000 to 3300 meters.

Eremocharis triradiata (Wolff) Johnston, Contr. Gray Herb. 85: 174. 1929. *Asteriscium triradiatum* Wolff, Bot. Jahrb. 40: 292. 1908.

Low shrub, 0.5–2 m. tall, intricately dichotomously branched, the branches short, stiff, and markedly spinescent, spreading, terete, striate or obscurely grooved, the older parts with prominently exfoliating bark; leaves numerous, alternate and prominently fascicled below, 0.5–1.2 cm. long, 0.5–1 cm. broad, ovate-cuneate, trilobed or triparted, the lobes cuneate-oblanceolate, 3–8 mm. long, 2–5 mm. broad, the central one exceeding the two lateral, all spinose-dentate or 1–3-lobed; petiole linear, 1–2 cm. long, dilated only at base; cauline leaves reduced upward, becoming spatulate-cuneate and shallowly

trilobed or even entire; peduncles in groups of 2–4, spreading, 0.5–3 cm. long, attenuate at apex, each subtended by an oblong leaf 1–3 mm. long; umbels rather compact, 5–12 mm. in diameter, with usually 3–8 flowers, the bracts ovate-lanceolate, acute, 1–1.5 mm. long; flowers deep maroon to blackish-violet; calyx lobes triangular-ovate, about 0.5 mm. long, conspicuously shorter than the petals; petals obovate, 1 mm. long, with a linear-lanceolate inflexed apex about 2/3 length of blade; stylopodium much shorter than the rather slender divergent styles; pedicels slender, 1.5–5.5 mm. long, spreading; fruit orbicular to oval, 1.5–2 mm. long, 1.5 mm. broad, sharply angled, the carpels slightly concave dorsally, the margins prominent.

Illustrations: Math. & Const. Univ. Calif. Publ. Bot. 33: 156, *f. 24.* 1962.

Cusco: Pr. Urubamba: prope Ollantaitambo, 2800–2900 m., *Weberbauer 4934,* type; Ollantaitambo, open rocky slope, 2900–3100 m., *Pennell 13652;* Urubamba Valley, 3000 m., *Herrera 1523;* Ollantaitambo, 3000 m., *Cook & Gilbert 805, 308, Hutchison 1799;* Pumahuára, 3000–3200 m., *Vargas 7682:* Urquillos, on rocky clay slopes, 2860 m., *Vargas 11098.* Pr. Quispicanchis: Huambutió, below Oropesa, open rocky slopes, 3300–3400 m., *Pennell 14198;* Huambutió, 3000 m., *Vargas 1533;* en la localidad de Huambutió, 3000 m., *Univ. Cusco 1170.* Pr. Calca: Hda. Urco, 2960 m., *Vargas 703;* Urubamba (Vilcanota) Valley, Hda. Sondor, 3000 m., *West 8074;* Hacienda Orco prope opp. Calca, *Hammarlund 590;* Urcos, 3000 m., *Rauh & Hirsch 1114;* Urco, near Calca, 13,000 ft., *Balls 6832;* near Urcos, banks of Vilcanota, *Hill 195;* above Pisac, *Hutchison 1806.* Pr. Convención: Valle del Urubamba, 2000 m., *Velarde 1075, Gay 1798.* Pr. Cusco: below Cusco, *Rose & Rose 19075.* Pr. Paucartambo: Río Cosñipata, *Whitely.*

Described as an annual herb by Vargas. Commonly known as *supayccareco.* Flowers lemon-scented and entire plant very strongly aromatic. Growing on parched rocky banks and slopes in full sun. Known only from the Department of Cusco, in the drainage area of the Río Urubamba, at elevations of 2000 to 3400 meters.

ERYNGIUM L.

Creeping to erect, herbaceous, caulescent or acaulescent, usually glabrous biennials or perennials, from stout taproots or rootstocks bearing fibrous roots. Leaves coriaceous or membranaceous, entire or pinnately or palmately lobed to divided, often ciliate to spinose, the venation parallel or reticulate. Petioles sheathing, sometimes

septate. Inflorescence capitate, the heads solitary, or in cymes or racemes. Involucre of one or more series of entire or lobed bracts subtending the head. Involucel of one or more series of entire or lobed bractlets (floral bracts) subtending the flowers. Flowers white to purple, sessile; petals ovate to oblong with variously inflexed and lobed to fimbriate tips; sepals prominent, ovate to lanceolate, acute to obtuse, entire or rarely spinescent; styles shorter than to exceeding sepals, the stylopodium lacking; carpophore absent. Fruit globose to obovoid, scarcely compressed laterally, variously covered with scales or tubercles; ribs obsolete; commissure broad; vittae mostly 5, inconspicuous. Seed subterete in transection, the face plane or slightly concave.

A genus of perhaps 200 species widely distributed through the temperate and subtropical areas of the world.

Leaves parallel-veined, monocotyledonoid.

Bractlets entire; leaf spines not spinulose; marginal veins parallel, not branching.....*E. rauhianum.*

Bractlets tridentate; leaf spines spinulose on ventral edge, 1 or 2 spinulae between main spines; marginal veins branching.
E. weberbaueri.

Leaves reticulate-veined.

Plants cymosely branched above; bracts not bicolored; inflorescence trifurcate, the central peduncles shorter than the lateral.

Heads cylindric; bracts foliaceous, greatly exceeding heads.
E. foetidum.

Heads ovoid, 6–10 mm. broad; bracts spinose, rigid, only slightly longer than heads..... .....*E. nudicaule peruvianum.*

Plants acaulescent or if caulescent essentially unbranched; bracts bicolored; inflorescence solitary or if branched the central peduncle greatly exceeding the lateral.....*E. humile.*

Eryngium foetidum L. Sp. Pl. 232. 1753, in principal part, excl. syn. *E. antihystericum* Rottb. Acta Lit. Univ. Hafn. 1: 288. 1778. *E. foetidum* f. *comosum* Urban in Mart. Fl. Bras. 11 (1): 302. 1879. *E. foetidum* f. *nudum* Wolff in Engler, Pflanzenr. 61 (IV, 228): 203. 1913.

Slender, caulescent, branching, glabrous biennials, 0.5–6 dm. high, from a fascicle of fibrous roots, the stems mostly solitary, erect; basal leaves thin and herbaceous, lanceolate or oblanceolate, 3–27 cm. long, 1–5 cm. broad, cuneate at base, obtuse at apex, callous-

margined, crenate to finely spinulose-serrate, the venation pinnately reticulate; petioles short or obsolete, broadly sheathing, up to 3 cm. long; lower cauline leaves like the basal, the upper reduced, sessile and usually opposite, deeply spinulose-serrate to parted; inflorescence divaricately trifurcate, the lateral branches often continuing to form a monochasium, the heads numerous, small, short-pedunculate, the flowers numerous; heads cylindric, 7–11 mm. long, 3–5 mm. broad; bracts 5–6, foliaceous, spreading and reflexed, lanceolate, 1–4 cm. long, 2–10 mm. broad, mucronate, entire or with 1 or 2 pairs of weak marginal spines, rarely parted, green on both surfaces, greatly exceeding heads; bractlets linear or lanceolate, 2–3 mm. long, exceeding fruit; coma conspicuous or wanting; sepals lanceolate to ovate, about 0.5 mm. long, acute, weakly mucronate; petals oblanceolate to obovate, about 0.5 mm. long; styles short, slightly exceeding sepals; fruit globose or slightly broader than long; about 1.5 mm. long, densely papillose with globose, tawny processes.

Illustrations: Mart. Fl. Bras. 11 (1): *pl. 79, II.* 1879. Vellozo, Fl. Flum. Icon. 3: *pl. 79.* 1827.

Huánuco: Pr. Huánuco: Tingo María, edge of forest, *Asplund 13215.* Pr. Pachitea: Pozuzo, *Esposto 893.*—Ica: Pr. Nasca: 52.4 km. south of Nasca, *Rahn 195.*—Junín: Pr. Tarma: Chanchamayo Valley, 1000 m., *Schunke 356.*—Loreto: Pr. Coronel Portillo: borders of cultivated field, east of Aguaytía, *Mathias 5082.* Pr. Ucayali: Stromgebiet des Ucayali von 10° S. bis zur Mundung, *Tessmann 3435.* Pr. Maynas: lower Río Nanay, *Williams 389;* La Victoria on the Amazon River, *Williams 2515.* Pr. Alto Amazonas: Garden, Fortaleza (Yurimaguas), lower Río Huallaga, 155–210 m., *Williams 4503;* pasture, Puerto Arturo, lower Río Huallaga, 155–210 m., *Williams 4979.*—San Martín: Pr. Mariscal Cáceres: muddy roadside, western end of Boquerón de Abád, *Mathias 3595.* Pr. Lamas: Tarapoto, *Scolnik 1197.*

Locally known as *sacha culantro, culandro,* and *siuca culantro.* The leaves are used as a condiment and occasionally as a medicine. Occasionally cultivated as a condiment, widely distributed from Vera Cruz to Panama and the West Indies south to Brasil and Bolivia.

Eryngium humile Cav. Anal. Hist. Nat. 2: 115. 1800; Icon. 6: 37, *pl. 556, f. 1.* 1800. *E. subacaule* Cav. Anal. Hist. Nat. 2: 116. 1800; Icon. 6: 37, *pl. 556, f. 2.* 1800. *E. humile* var. *C.* Delar. Eryng. 56, *pl. 18, f. 2.* 1808. *E. stellatum* Mutis ex Delar. Eryng. 55, *pl. 25.* 1808. *E. humile* var. γ *subacaule* HBK. Nov. Gen. & Sp. 5: 33. 8121.

E. humile var. β *caulescens* HBK. l.c. *E. radiciflorum* Tratt. Archiv. *pl. 764* ex DC. Prodr. 4: 93. 1830. *E. humile* var. *caulescens* Hook. Icon. 3: *pl. 216*. 1840. *E. humile* var. *latipes* Hook. Icon. 3: *pl. 216*. 1840. *E. humile* β *pulchellum* Wedd. Chlor. And. 2: 201. 1861. *E. humile* subvar. *acaulis* Wedd. l.c. *E. pulchellum* Wedd. l.c., nomen in synon, not of Phil. 1860. *E. humile* var. *brevibracteatum* Hieron. Bot. Jahrb. 20: Beibl. 49: 72. 1895. *E. humile* var. *radiciflorum* (Tratt.) Hieron. ex Wolff in Engler, Pflanzenr. 61 (IV, 228): 189. 1913. *E. humile* var. *typicum* Wolff, l.c. *E. humile* var. *subacaule* Wolff, op. cit., 190. *E. humile* var. *stellatum* (Mutis) Hieron. ex Wolff, l.c. *E. humile* var. *multiradiatum* Hieron. ex Wolff, l.c., nomen in synon. *E. humile* var. *gigantophyllum* Wolff, l.c.

Glabrous perennial, acaulescent or caulescent to 6 dm. high, from a cluster of fascicled roots; leaves rosulate, the blades ovate-oblong to obovate, 2–15 cm. long, 0.8–2 cm. broad, spinulose-crenate-serrate, reticulate-veined, the margin cartilaginous, paler beneath, obtuse, decurrent below; cauline leaves 1 or 2 pairs, connate at base; peduncles solitary, subsessile, to 25 cm. long, or arranged in trifurcate inflorescence, the central peduncle much longer than the laterals, to 12 cm. long; heads ovoid to depressed-globose, 0.5–1 cm. long, about as broad, with numerous white or blue flowers; bracts rigid, about 10, oblanceolate, acute, entire, or sparingly spinulose-serrulate, bicolored, greenish without, silvery within, the bractlets entire, spinose, shorter than to equaling the flowers; fruit ovoid, ca. 2 mm. long, 1.5–2 mm. broad, the scales homomorphic, ovate-vesicular.

Illustrations: Hook. Ic. 3: *pl. 216*. 1840. Wedd. Chor. And. 2: *pl. 69 A*. 1860. Schimper, Pflanzen-Geogr. 781, *fig. 440 (2)*. 1898. Engler, Pflanzenr. 61 (IV, 228): 189, *f. 31*. 1913.

Amazonas: Pr. Chachapoyas: path, Chachapoyas-Moyabamba, Central Cordillera of the Andes, 2700–3300 m., *Williams 7595;* Cerro Puna-urco, 3200 m., *Ochoa 1675;* lado oriental del valle del Marañon, encima de Balsas, 3500–3600 m., *Weberbauer 4292.*—Ancash: Pr. Huaylas: encima de Pampa Comas en el Camino de Samanco a Caraz, 3100–3300 m., *Weberbauer 3214;* Cord. Blanca, 3900 m., *Rauh & Hirsch 1993.*—Cajamarca: Pr. Contumaza: Guzmango, Cruz Grande, Cumbre el Gavilán, Carretera Cajamarca-Chilete, 3200 m., *Ferreyra 3270*, 3200–3400 m., *Sagástegui 0099*. Pr. Celendín: Celendín, 2750 m., *López & Sagástegui 3107*. Pr. Chota: arriba de Chota, 2700–2800 m., *Ferreyra 8491;* entre Huambos y Llama, 2000–2300 m., *Ferreyra 870*. Pr. Hualgayoc: abajo de San Miguél,

2500–2600 m., *Weberbauer 3912.* Pr. Cajamarca: Cajamarca, *Diaz.* —Cusco: Pr. Calca: Urcos, 11,000 ft., *Stafford 1005.*—Huancavelica: Pr. Tayacaja: entre Colcabamba y Cuicabamba, 2800–2900 m., *Tovar 1813;* Chuspi-Tocas, entre Colcabamba y Paucarbamba, 2900–3000 m., *Tovar 2033.*—Huánuco: Pr. Huánuco, Carpish, cumbre entre Huánuco y Tingo María, 2700–2800 m., *Ferreyra 1839;* Mitotambo, arriba de Mito, 3000–3100 m., *Ferreyra 6691;* 2900–3000 m., *Ferreyra 9490;* Pillao, 2700 m., *Woytkowski 34054;* 15 mi. southeast of Huánuco, 10,500 ft., *Macbride & Featherstone 2091;* Mito, about 9000 ft., *Macbride & Featherstone 1795.* Pr. Dos de Mayo: Chavinillo, 3900 m., *Woytkowski 276;* 3400–3800 m., *Woytkowski 867.*—Junín: Pr. Huancayo: Huancayo, 3317 m., *Soukup 2749.* Pr. Tarma: cerros al este de Palca, 3000–3100 m., *Weberbauer 2430.* Pr. Yauli: Oroya near Lima, 13,000–14,000 ft., *Kalenborn 106.*—La Libertad: Pr. Santiago de Chuco: Quesquenda, Jalca de Quiruvilca, 4000 m., *López & Sagástegui 2878.* Pr. Bolívar: camino a Cujibamba, Bolívar, 3300 m., *López & Sagástegui 3300;* arriba de Longotea, 3200 m., *López & Sagástegui 3180;* camino unámen, Bolívar, 3050 m., *López & Sagástegui 3325.* Pr. Huamachuco: Munmalca, Hda. Cochabamba, 3200 m., *López & Sagástegui 2823.* Pr. Otuzco: Agallpampa, 3270 m., *López 1039;* Yamobamba, 2800 m., *Angulo 1421.* Pr. Tarma: "Camino de Vitoc a los altos de Palca," *Isern 34* (*Cuatrecasas 2210*).—Pasco: Pr. D. Carrión: Hacienda 9 mi. up river from Yanahuanca, Chinche, 11,500 ft., *Macbride & Featherstone 1270, 1269.*—Without definite locality: *Ruiz & Pavón.*

Common on open grassy slopes at elevations of 2500 to 3900 meters, Colombia to Peru. Wolff recognized eight varieties of *E. humile* based primarily on habit, development of peduncles, leaf outline, and type of involucre. Others have recognized at least two varieties, the one acaulescent and the other caulescent. The authors conclude that the extensive collections now available offer such a complete series with respect to these characters that only one taxon can be delimited. However, extended field studies over the entire range of the species may lead to subsequent delimitation of subspecific taxa.

Eryngium nudicaule var. **peruvianum** Urban, Mart. Fl. Bras. 11 (1): 304. 1879.

Slender glabrous perennial to 2 dm. high, from a stout sometimes horizontal rootstock; basal leaves rosulate, the blades ovate-oblong, to 3 cm. long, about 1 cm. broad, spinose-serrate, reticulately veined,

obtuse, cuneate, the petiole about 2 cm. long; inflorescence cymosely trifurcately branched, the central peduncle shorter than the laterals; heads shortly ovoid; bracts rigid, linear-lanceolate, spinose, about equaling flowering heads, spreading, entire, cartilaginous-margined; bractlets similar, slightly exceeding flowers; fruit ovoid with lateral scales, naked dorsally.

Cusco: Pr. Canchis: Sicuani, in clayey soil among grasses, 3650 m., *Vargas 9825 (1471)*; Sicuani, 3551 m., *Hicken 28*.

A polymorphic species common in fields, southern Brasil to Argentina and Bolivia; variety *peruvianum* is confined to southern Peru, Bolivia and northern Argentina.

Eryngium rauhianum Math. & Const. Bull. Torrey Club 84: 192, *f. 3*. 1957.

Slender, caulescent, glabrous perennial 1–1.5 m. tall from a thick rootstock bearing fibrous roots, the stems several, slender, unbranched below the inflorescence; basal leaves rather rigid, linear-lanceolate, 15–25 cm. long, 1–2 cm. broad at base, broadest at or below the middle, acuminate, spinulose-dentate with short, subequal, spreading-ascending solitary spines 3–7 mm. long, mostly 3–8 mm. apart toward base, the venation parallel; sheath as broad as or broader than the blade, 3–4 cm. long, plane; cauline leaves like the basal, alternate below, the uppermost opposite and bractlike, spreading; inflorescence paniculate, 4–8 dm. long, the lower branches alternate, axillary, the terminal in a 4–6-membered whorl; heads numerous, pedunculate, ovoid, blue, 10–12 mm. long, 8–10 mm. broad, the flowers numerous; bracts 8–10, rigid, curved, spreading-ascending, ovate-lanceolate, acuminate, 4–6 mm. long, subequal, entire or with a lateral spinose tooth, a little scabridulous distally, much shorter than the heads; bractlets like the bracts, ovate-lanceolate, 2–3 mm. long, curved, entire, scabridulous, greatly exceeding the flowers; coma wanting; sepals oval to orbicular, 1.2–1.5 mm. long, 0.8–1 mm. broad, obtuse, mucronulate, blue, scabridulous; petals oval, about 1 mm. long, the narrower distally bifid, the inflexed apex subequal; immature fruit cuneate, 1.5–2 mm. long, 1.5 mm. broad, the lateral scales linear-lanceolate, free, forming a pair of prominent wings, the calycine scales uniseriate, lanceolate to ovate, prominent, the dorsal scales obsolete or wanting.

Cusco: Pr. Quispicanchis: Río Marcapata, dry places, *Rauh & Hirsch 1279*, type.

The Peruvian specimens listed by Wolff under *E. delarocheanum* in Engler, Pflanzenreich 61 (IV, 228): 251. 1913, probably belong to this species: "Sandia, an felsigen Abhängen (Weberbauer n. 578-blühend in März). Einh. Name: Chuchurapi." And Weberbauer himself lists as *E. paniculatum* from the Department of Cusco plants, probably referable to this taxon, occurring as herbaceous components of the steppe and *pajonal* between 2000 and 3500 meters, on the ridges of the Marcapata (El Mundo Vegetal de los Andes peruanos, p. 564) and Sandia (Die Pflanzenwelt der peruanischen Andes, p. 238; El Mundo Vegetal de los Andes peruanos, p. 568).

Eryngium weberbaueri Wolff, Bot. Jahrb. 40: 294. 1908.

Stout caulescent, glabrous perennials to 1 m. high from a thickened rootstock; basal leaves rigid, linear-lanceolate, 15–27 cm. long, about 1.5 cm. broad, broadest at or below the middle, acute, spinose-dentate with subequal spreading-ascending solitary spines 3–7 mm. long, ventrally spinulose, mostly 3–8 mm. apart, the venation parallel; the sheath as broad as the blade, plane; cauline leaves few, like the basal, becoming smaller above and opposite in the inflorescence; inflorescence umbellately branched, the peduncles to 7 cm. long, the heads few, broadly cylindrical to ovoid, 15–25 mm. long, 10–15 mm. broad; flowers numerous, dark-violet; bracts several, lanceolate, pinnately spinose, much shorter than the heads; bractlets similar, longer than the flowers; fruit brown, oblong-ovoid, 2 mm. long, 1.5–2 mm. broad, the lateral scales forming a pair of prominent wings, the calycine scales in one series, the intermediate scales smaller.

Ayacucho: Pr. Huanta: Putis, Choimacota Valley, grass steppe, 3400 m., *Weberbauer 7527.*—Cusco: Pr. Urubamba: Ollantaitambo, 3000 m., *Cook & Gilbert 694;* Valle del Urubamba, 3400 m., Ollantaitambo, *Herrera 3434.* Pr. Paucartambo: Hacienda Churu, 3700 m., *Herrera 1028;* Paucartambo to Tres Cruces, Cerro de Cusilluyoc, 3300–3500 m., *Pennell 14168;* Ayapata, Huaisampilla, 2800 m., *Vargas 9938, Herrera 2594.*—Junín: Pr. Huancayo: Huancayo, *Soukup 3580,* 3317 m., *Soukup 2931.* Pr. Tarma: in montibus a Palca, 2700–3100 m., *Weberbauer 2438,* type.—Puno: Pr. Sandia: near Limbani, 3200–3450 m., *Metcalf 30533.*

Dry open places among rocks and in grass steppes, southern Peru, and now to be extended to Bolivia (*Brooke 5085:* Calomi, 30 miles ENE of Cochabamba). Commonly known as *escorzonera.*

FOENICULUM Adans.

Slender, erect, herbaceous, caulescent, branching, glabrous and glaucous perennials or biennials with a strong anise odor, from taproots. Leaves petiolate, membranaceous, pinnately decompound, the ultimate divisions filiform. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and axillary. Involucre wanting. Rays numerous, ascending. Involucel wanting. Pedicels several, spreading. Flowers yellow; petals obovate with a narrower inflexed apex; calyx lobes obsolete; styles very short, recurved, the stylopodium conic. Carpophore 2-parted to base. Fruit oblong, slightly compressed laterally, glabrous; ribs prominent, acute or obtuse; vittae solitary in the intervals, 2 on the commissure; seed compressed dorsally in transection, often sulcate under the intervals, the face plane or slightly concave.

An Old World genus of four species, one of which has become a well-established weed in the warm-temperate or subtropical areas of the western hemisphere.

Foeniculum vulgare Mill. Gard. Dict. ed. 8. *Foeniculum* no. 1. 1768. *Anethum foeniculum* L. Sp. Pl. 263. 1753. *Ligusticum foeniculum* Crantz, Class. Umbell. 82. 1767. *Foeniculum officinale* All. Fl. Ped. 2: 25. 1785. *F. foeniculum* Karst. Deutsch. Fl. 837. 1882.

Plants stout, 9–21 dm. high; leaves ovate to deltoid, the blades about 3 dm. long, 4 dm. broad, pinnately decompound, glaucous to dark green, the leaflets filiform, 4–40 mm. long, about 0.5 mm. broad; petioles 7–14 cm. long, wholly and broadly sheathing; inflorescence branching, the peduncles 15–65 mm. long; rays 15–40, spreading-ascending in flower, ascending to suberect in fruit, somewhat unequal, 1–6.5 cm. long; pedicels several, 2–10 mm. long, subequal; fruit oblong, 3.5–4 mm. long, 1.5–2 mm. broad, the ribs acute.

Illustrations: Gaertn. Fruct. *pl. 23*. 1788. Wight, Ic. Pl. Ind. Or. 2: *pl. 570*. 1842. Britt. & Brown, Ill. Fl. ed. 2, 2: 643. 1913. Britton, Fl. Bermuda 276. 1918. Jeps. Madroño 1: 143. 1923.

Apurimac: Pr. Abancay: Pachachaca Bridge over Río Pachachaca, 1850 m., *Hutchison 1726*.—Arequipa: Pr. Caravelí: lomas de Atiquipa, entre Nazca y Chala, 400–500 m., *Ferreyra 13505*.—Lima: cult. Museo, *Cornejo*. Pr. Huarochirí: Surco, 2000 m., *Asplund 11031;* Matucana, thoroughly established among boulders along river, 8000 ft., *Macbride & Featherstone 322*.—San Martín: Pr. Lamas: Chácara, San Roque, 1350–1500 m., *Williams 7361;* garden, Tarapoto, 750 m., *Williams 5935;* Lamas, 840 m., *Williams 6349*.

The cultivated fennel, locally known as *anis*, native of the Mediterranean region and adventive throughout the western hemisphere.

HYDROCOTYLE (Tourn.) L.

Reference: Mathias, The genus *Hydrocotyle* in northern South America. Brittonia 2: 201–237. 1936.

Low, glabrous or pubescent, herbaceous perennials with slender creeping stems or rootstocks. Leaves petiolate, peltate or non-peltate, entire or parted to base; petioles slender. Inflorescence usually a simple umbel, sometimes proliferous or an interrupted spike; peduncles axillary, subsessile to much exceeding leaves; involucre absent or present; flowers white, greenish, purplish, or yellow; petals ovate, plane; calyx lobes minute or obsolete; stylopodium depressed to conspicuously conical. Fruit transversely ovate to orbicular, strongly flattened laterally, dorsal surface rounded or acute, the lateral ribs conspicuous, slender, acute, rarely obscure, the dorsal ribs acute, rarely obscure; carpels orbicular to triangular in transection; seed face plane to convex; oil-bearing cells conspicuous to obsolete; strengthening cells surrounding the seed cavity.

A large circum-austral genus, of perhaps 75 species, with important incursions into the northern hemisphere. Certain species are common in the strand floras of the world. *Hydrocotyle* is the largest genus of Umbelliferae in Peru, with approximately 20 species, some known only from the type localities.

Leaves peltate, the petiole not attached at the leaf margin.
- Inflorescence a proliferous umbel.....*H. bonariensis.*
- Inflorescence a simple umbel.
  - Leaves orbicular-reniform, not lobed or with shallow, broad lobes.
    - Flowers and fruit sessile to subsessile.....*H. pusilla.*
    - Flowers and fruit pedicellate.....*H. umbellata.*
  - Leaves deltoid-acuminate to orbicular-acuminate, crenate, shallowly lobed or angulate-lobed.
    - Leaves not angulate-lobed.
      - Peduncles more than 30 cm. long; leaves irregularly crenate, not lobed.....*H. longipes.*
      - Peduncles less than 30 cm. long; leaves shallowly lobed. *H. acuminata.*

Leaves angulate-lobed.

Leaf lobes unequal, the apical conspicuously elongate.

Petioles more or less retrorse-hirsute; mature pedicels 8–13 mm. long.....*H. quinqueloba.*

Petioles glabrous; mature pedicels 3–6 mm. long. *H. peruviana.*

Leaf lobes subequal, the apical not elongate..*H. humboldtii.*

Leaves paleaceous, not peltate, the petiole attached at the leaf margin, or if peltate the blade palmately divided.

Leaves trifoliate, the lateral leaflets parted nearly to base.

Stems glabrous; leaflets spinulose-dentate and shallowly lobed. *H. macbridei.*

Stems hirsute, especially at nodes; leaflets pinnately divided to incised-dentate.....*H. palmata.*

Leaves lobed not more than to middle, or merely crenate.

Plants aquatic or semiaquatic; roots conspicuously long-fibrous; leaves parted about to middle.....*H. ranunculoides.*

Plants terrestrial; roots not conspicuously long-fibrous; leaves shallowly lobed or crenate.

Umbels 50–200-flowered.

Leaf lobes subequal, the apical scarcely elongate.

Apical leaf lobe slightly elongate; stems sparingly hirsute to glabrate.....*H. globiflora.*

Apical leaf lobe not elongate; stems rufo-villous. *H. dahlgrenii.*

Leaf lobes unequal, the apical conspicuously elongate.

Stems essentially glabrous; peduncles sparsely pubescent. *H. acutifolia.*

Stems rufo-hirsute; peduncles hirsute.....*H. vestita.*

Umbels 7–45-flowered.

Leaves angulately 5–7-lobed, the lobes acute to subacuminate; stems rufo-villous.....*H. steyermarkii.*

Leaves not angulately lobed, the lobes rounded, sometimes truncate; stems not rufo-villous.

Pedicels pubescent.

Leaves shallowly 9–11-lobed...*H. bonplandii hirtipes.*

Leaves 7–9-lobed about 1/3 distance to sinus. *H. alchemilloides.*

Pedicels glabrous.

Leaves lobed ¼–⅓ distance to sinus...*H. urbaniana.*

Leaves shallowly lobed.

Peduncles densely pubescent above; pedicels 0.5–1.5 mm. long; leaf margins thickened, slightly involute.....*H. incrassata.*

Peduncles glabrous to sparingly villous; pedicels 3–6 mm. long; leaf margins neither thickened nor involute.....*H. filipes.*

Hydrocotyle acuminata Urban, Mart. Fl. Bras. 11 (1): 273, *pl. 72,* IV. 1879. *H. eccentrica* Britt. Bull. Torrey Club 18: 36. 1891.

Stems slender, creeping, or climbing to 1.5 m., glabrous to sparingly hirsute; leaves peltate, ovate-acuminate, 1–7 cm. in diameter, shallowly 9–11-lobed, serrulate to doubly crenate, the apical lobe long-acuminate, essentially glabrous above and below, or with a few long hairs on the veins, the petioles slender, 5–25 cm. long, glabrous; peduncles equaling or exceeding the leaves, 3–15 cm. long, glabrous; umbels 12–30-flowered, the pedicels 2–7 mm. long, ascending to reflexed, glabrous; fruit ovate to suborbicular, 1–1.5 mm. long, 1.5–3 mm. broad, glabrous, the ribs distinct, acute, the stylopodium conical.—F.M. Neg. 37063.

Illustrations: Bull. Internat. Ceska Akad. Fr. Jos. 13: 126, *fig. 3a.* 1909 (as *H. excentrica*).

Cusco: Pr. Paucartambo: Sapansachayoc, 1200 m., *Vargas 10248;* Valle de Compata, 600 m., *Velarde 1230;* Sta. Isabel, 1320 m., *Vargas 6763.*—Huancavelica: Pr. Tayacaja: Montepungo, 5 km. east of Surcubamba, 3000 m., *Stork & Horton 10390, Sander & Sons;* El Gaván, *Lechler 2305.*

Southern Peru to Bolivia and adjacent Brasil. Frequent in moist areas.

Hydrocotyle acutifolia R. & P. Fl. Peruv. 3: 25, *pl. 248, f. a.* 1802. *Spananthe sinuata* Spreng. Syst. 1: 878. 1825. *Hydrocotyle cardiophylla* Wolff, Bot. Jahrb. 40: 282. 1908.

Stems stout, creeping or climbing to 2 m., glabrous to sparingly hirsute; leaves not peltate, orbicular-acuminate, 3–12 cm. in diameter, appressed-hirsutulous to hirsute above and below especially on veins, 9–13-veined, obscurely subangulately 3–8-lobed, the lobes crenate or crenate-serrate, the apical lobe elongate, deltoid, acute to

acuminate, the petioles slender, 5–22 cm. long, hirsute with divaricate hairs, especially above; peduncles longer than the leaves, 10–30 dm. long, glabrous to villosulous; umbels 50–60-flowered, the pedicels filiform, 5–12 mm. long, reflexed and spreading, glabrous to hirsutulous; fruit orbicular-reniform, 1.5–2 mm. broad, glabrous, the ribs distinct, acute, the stylopodium conspicuous, conical.—F.M. Neg. 29667.

Ayacucho: Ccarrapa, between Huanta and Río Apurimac, 2200 m., *Killip & Smith 22313, 23215.*—Cusco: Pr. Urubamba: Machu Picchu Station, *Hutchison 1762;* Machu Picchu, 2600 m., *Ferreyra 9895,* 2040 m., *Vargas 1880,* 2000 m., *Rauh 858;* Quebrada de Aguas Calientes near La Máquina (Machu Picchu Station), 2150 m., *West 8034;* San Miguél, Urubamba Valley, *Cook & Gilbert 1112.* Pr. Paucartambo: Lanamayo, 1600 m., *Vargas 6795;* Callanga, 1500 m., *Woytkowski 427;* Pillahuata, 3000 m., *Velarde 1253, 1245.* Pr. Convención: Valle Lucumayo, Amaibamba, 1650 m., *Vargas 7496.*—Huánuco: Pr. Huánuco: Carpish, 2700 m., *Woytkowski;* Trocha Hda. Paty-Campamento Priano, entre Huánuco y Tingo María, 2300–2400 m., *Ferreyra 9407;* roadside bank in dense shade under tree ferns, ca. 4.5 km. below summit of Carpish and above Chinchao, *Mathias 5164;* Pillao, *Ruiz & Pavón,* type. Pr. Pachitea: gravelly stream bank, 5000 ft., Cushi, *Macbride 4837.*—Junín: Cusa, *Ruiz & Pavón.* Pr. Tarma: cerca a San Ramón, 800–900 m., *Constance & Tovar 2216;* Carpapata, above Huacapistana, 2700–3200 m., *Killip & Smith 24446;* Huacapistana, 1800–2400 m., *Killip & Smith 24106, Weberbauer 2144,* type of *H. cardiophylla;* San Juan, cerca a Huacapistana, entre Tarma y San Ramón, 2100–2200 m., *Ferreyra 11298;* Huacapistana, margen izquierdo del Río Tarma, 1800–1900 m., *Ferreyra 11250;* Chanchamayo Valley, above Lake Merced at Cumbre Yacunay near summit, 2500 m., *Hutchison 1167;* Chanchamayo, *Isern 2423;* Huacapistana, entre Tarma y San Ramón, 1800 m., *Ferreyra 3839;* Pumahuishea cerca al Puente San Felix, 1000 m., *Cerrate 2875.*

Frequent in moist sites, vining through shrubs, to Ecuador.

Hydrocotyle alchemilloides Rich. Ann. Sci. Phys. 4: 193, *pl. 63, f. 31.* 1820. *H. citriodora* R. & P. Fl. Peruv. 3: 26. 1802, in part. *H. geranioides* Rich. Ann. Sci. Phys. 4: 197, *pl. 59, f. 21.* 1820. *H. chamaemorus* var. *citriodora* Reiche, Fl. Chile 3: 54. 1902.

Stems slender, creeping, glabrous to subglabrate; leaves orbicular-reniform, not peltate, 2–8 cm. in diameter, hirtellous to hirsute with appressed ascending hairs on the veins above; glabrous to hirsutulous

beneath with appressed ascending hairs, shallowly 7–11-lobed not more than 1/3 distance to sinus, the lobes subequal, crenate, the crenations subequal, the petioles slender, 2–18 cm. long, densely hirsute with spreading and reflexed hairs, especially above; peduncles slender, shorter or longer than the leaves, hirsutulous to hirsute above with somewhat reflexed hairs; umbels 10–25-flowered, the pedicels slender, 2–3 mm. long, reflexed and spreading, glabrous to hirsutulous; fruit transversely elliptical to orbicular-reniform, 1 mm. long to about 2 mm. broad, glabrous, the stylopodium depressed.—F.M. Negs. 37064, 37067.

Cusco: Pr. Urubamba: Veronica, 3500 m., *Rauh & Hirsch 1062.*—Huánuco: Pr. Huánuco: Pillao, 2700 m., *Woytkowski 104.* Pr. Ambo: Pueblo 3 miles below Ambo, Tomaiquichua, 8500 ft., *Macbride & Featherstone 2434.*—Junín: Pr. Tarma: Pachacama, *Dombey, Ruiz & Pavón, Jussieu,* type of *H. alchemilloides;* entre Palca y Huacapistana, 2800 m., *Ferreyra 11006.*—Pasco: Pr. Pasco: La Quinua, 3500 m., *Asplund 12004.*—Without definite locality: *Dombey,* type of *H. geranioides.*

Moist woods to Ecuador.

Hydrocotyle bonariensis Lam. Encycl. 3: 153. 1789. *H. multiflora* R. & P. Fl. Peruv. 3: 24, *pl. 246, f. a.* 1802. *H. tribotrys* R. & P. op. cit. *pl. 246, f. b. H. bonariensis β tribotrys* DC. Prodr. 4: 60. 1830. *H. bonariensis* var. *multiflora* G. Don, Gen. Hist. Dich. Pl. 3: 249. 1834. *H. umbellata β bonariensis* G. Don, l.c., in synon.; Speg. Anal. Soc. Argent. 48: 54. 1899.

Plants glabrous from tuberous roots; stems slender, creeping; leaves orbicular- to ovate-peltate, 1.2–12 cm. in diameter, shallowly 12–19-lobed, the lobes crenate, the petioles slender, 2–38.5 cm. long; peduncles longer than the leaves, 2.5–35 cm. long; umbels proliferous, many-flowered, the flowers white or yellow, the pedicels 2–20 mm. long, spreading and reflexed; fruit transversely ovate, 1–2 mm. long, 2–4 mm. broad, the ribs distinct, acute, the stylopodium depressed.—F.M. Neg. 29671.

Illustrations: Cav. Ic. 5: *pl. 488, f. 1.* 1799. Mart. Fl. Bras. 11 (1): *pl. 72, I.* 1879. Ber. Deutsch. Bot. Ges. 14: *pl. 5, f. 7.* 1896. Lilloa 2: 441, *f. 7.* 1938. Rev. Invest. Agr. 4: 30, *f. 9.* 1950. Bull. Internat. Ceska Akad. Fr. Jos. 13: 126, *f. 3g.* 1909. Physis 11: 6, *fig. 1, A–C.* 1933. Goebel, Entfaltungsbeweg. Pflanzen 169, *f. 100, 101.* 1920.

Apurimac: Pr. Abancay: Abancay, *Herb. San Marcos 105.*—Arequipa: Pr. Arequipa: Arequipa, *Soukup 992, Holway & Holway 772;*

along irrigation ditch, Tingo, 2200–2300 m., *Pennell 13148;* near Tingo, vicinity of Arequipa, *Rose & Rose 18799;* Tiabaya, cerca a Arequipa, 2300 m., borde de acequia, *Ferreyra;* Chacra, Pachacutac, 3800 ft., *Balls B 5874;* Yura, *Williams 2556.* Pr. Caravelí: La Aguada, cerca a Chala, 8–10 m., *Ferreyra 7240.*—Cusco: Pr. Convención: Hda. Potrero, *Vargas 1698;* Santa Ana, *Cook & Gilbert 1589;* San Miguél, Urubamba Valley, *Cook & Gilbert 973;* Torontoy, Urubamba Valley, *Cook & Gilbert 1098.* Pr. Calca: Hacienda Orco prope opp. Calca, *Hammarlund 591.*—Huancavelica: Pr. Angaraes: 3 km. west of Huanta, 2000 m., *Stork & Horton 10812.*—Huánuco: en un cultivo de caña de azucar, 2000 m., *Woytkowski 733.* Pr. Huánuco: banks of irrigation ditch, Huánuco, 7000 ft., *Macbride & Featherstone 2071;* sandy river shore, Huánuco, *Asplund 13489;* Pampayacu, *Sawada.*—Ica: Pr. Pisco: Pisco, along irrigation ditch, *Johnston 3529.*—Junín: Pr. Tarma: shaded stream banks, Tarma, 3000–3300 m., *Killip & Smith 21773.* Pr. Yauli: vicinity of Oroya, 10–11,000 ft., *Kalenborn 72.*—La Libertad: Pr. Trujillo: wet ditch near sea level, Trujillo, *Killip & Smith 21505; Humboldt & Bonpland 3232;* river bottom near Trujillo, *Worth, Eyerdam & Morrison 8878;* Trujillo, Campiña de Moche, en borde de acequia, 35 m., *López 912;* Trujillo, Moche, 30 m., *Angulo & López 198;* Ruinas de Chanchan, 5 m., *Velarde.*—Lima: Pr. Lima: *André 4096, Gaudichaud, Dombey,* type of *H. multiflora, Weberbauer;* Callao, *Wilkes Expedition, Andersson;* Lurin, *Macbride 5932;* irrigation ditch banks, Chosica, *Macbride & Featherstone 504;* Santa Clara, *Rose & Rose 18725, Weddell;* Miraflores, cerca a Lima, borde a acequia, 157 m., *Maisch 158;* Hda. Villa, cerca de Lima, 20 m., *Ferreyra;* Cerro Agustino, cerca a Lima, 300 m., *Soukup 1546;* Hacienda Villa, cerca a Chorrillos 18 km. al sur de Lima, terrenos húmedos, cerca a la laguna, *Herb. San Marcos 11134;* Magdalena del Mar, cerca a Lima, borde de acequia, 157 m., *Ridoutt;* Chosica, borde del río, 800 m., *Ridoutt.* Pr. Canta: Santa Rosa de Quives, orillas del río, *Zuñiga.* Pr. Chancay: Hacienda Paramonga, orillas del estanque, *Ridoutt;* Hda. Otopongo (Pativilca), 200 m., *Velarde 2298.* Pr. Huarochirí: Surco, *Asplund 11017.*—Moquegua: Pr. Mariscal Nieto: 5 km. west of Moquegua, 850 m., *Hutchison 1850.*—Tacna: Pr. Tacna: Tacna, *Rusby 1760.*

To North Carolina, Brasil, Argentina, Uruguay and Chile; weedy along streams, irrigation ditches or in moist shady places. Commonly known as *sombrerito de abad* and *hierba del Padre Abad.* Roots used as a remedy for toothache.

Hydrocotyle bonplandii var. **hirtipes** Mathias, Brittonia 2: 233. 1936.

Stems filiform, creeping, glabrous to sparingly hirsute; leaves orbicular-reniform, not peltate, 0.5–3 cm. in diameter, essentially glabrous, shallowly 9–11-lobed, the lobes truncate, trilobulate, or tricrenate, the middle lobule or crenation equaling or slightly longer than the lateral, the petioles 0.5–12 cm. long, retrorse-hirsute, especially above; peduncles longer than the leaves, 1–9 cm. long, hirtellous; umbels 10–30-flowered, the pedicels 1–4 mm. long, spreading and reflexed, setulose; fruit orbicular to suborbicular, 1–1.5 mm. long, 1.5–2 mm. broad, glabrous, the ribs distinct, acute, the stylopodium depressed.

Huánuco: Pr. Huánuco: Río Huallaga Canyon, below Río Santo Domingo, *Macbride 4236*, type.

Known only from the type collection on vertical banks in grassy hillside at about 1200 meters.

Hydrocotyle dahlgrenii Rose & Macbr. Field Mus. Bot. 11: 32. 1931.

Stems stout, creeping, densely rufo- to tawny-villous; leaves reniform-cordate or suborbicular, not peltate, 3–7 cm. in diameter, appressed-hirsutulous above, especially on the nerves, densely villosulous below, shallowly 11–13-lobed, the lobes subequal, crenate, the apical crenations equaling or slightly longer than the lateral, the petioles stout, 2–7 cm. long, retrorse-villous; peduncles much longer than the leaves, about 10 cm. long, hirsutulous; umbels 60–80-flowered, the pedicels filiform, 5–8 mm. long, reflexed and spreading, glabrous; fruit orbicular-reniform, about 1.5 mm. broad, glabrous, the ribs acute, the stylopodium conical.—F.M. Neg. 44845.

Huánuco: Pr. Pachitea: moist sunny banks, Cueva Grande, Estación near Pozuzo, about 3500 feet, *Macbride 4776*, type.

Known only from the type collection.

Hydrocotyle filipes Mathias, Brittonia 2: 230. 1936.

Stems filiform to slender, creeping, glabrous or pubescent; leaves orbicular to orbicular-reniform, not peltate, 1–5 mm. in diameter, glabrous to hirtellous or hirsute with weak spreading hairs above and below, shallowly 7–9-lobed with crenate lobes, or not lobed and doubly crenate, the crenations subequal, the petioles slender, 1–10 cm.

long, crispate-hirtellous above to densely villous; peduncles filiform, longer than the leaves, 2.5–5 cm. long, glabrous to sparingly villous; umbels 7–25-flowered, the petals purplish, the pedicels filiform, 3–6 mm. long, ascending, glabrous; fruit transversely elliptical, 1–1.5 mm. long, 2–2.5 mm. broad, glabrous, the ribs indistinct, the stylopodium depressed.

Cusco: Pr. Urubamba: Huinaihuaina, 2550 m., *Vargas 4147;* Huayna Picchu, near summit, 2900 m., *Hutchison 1757.*—Piura: Pr. Huancabamba: Catulún, 3000 m., *Acleto 0524.*

To La Paz, Bolivia.

Hydrocotyle globiflora R. & P. Fl. Peruv. 3: 25, *pl. 247, f. a.* 1802. "*H. globifera* R. & P." in Mart. Fl. Bras. 11 (1): 281. 1879, error.

Stems stout, creeping, sparingly hirsute to glabrate; leaves not peltate, orbicular-reniform, 4–15 cm. in diameter, densely hirsutulous or hirsute on the veins above, hirsute to villous below, shallowly 10–14-lobed, the apical lobe slightly elongate, the lobes crenate, the apical crenation slightly longer than the lateral, the petioles stout, 4.5–70 cm. long, glabrous below to retrorse-hirsute above; umbels 80–150= (up to 200=?) flowered; pedicels 5–20 mm. long, reflexed and spreading, glabrous; fruit transversely elliptical, 1–1.5 mm. long, 1.5–2 mm. broad, glabrous; the ribs conspicuous, acute, the stylopodium conspicuous, conical, the styles spreading.—F.M. Neg. 29669.

Huánuco: Pr. Pachitea: Muña, *Ruiz & Pavón,* type; Muña, about 7000 ft., *Macbride 3946.* Pr. Huánuco: Pampayacu, hacienda at mouth of Río Chinchao, 3500 ft., *Macbride 5069;* along stream bank about 1 km. above Chinchao, *Mathias 5161.*

In deep soil of thickets and in open grassy areas on moist sunny slopes. *H. globiflora, H. acutifolia,* and *H. dahlgrenii* are closely related morphologically. The leaf shape and pubescence of *H. globiflora* are intermediate between those of *H. acutifolia* and *H. dahlgrenii,* suggesting possible gene exchange between these taxa. Along the road above Chinchao *H. acutifolia* is widespread and common in dense shade under tree ferns and bamboos while *H. globiflora* has been observed flowering only in full sun although twining also through shrubbery. *H. globiflora* has been observed at somewhat lower elevations than *H. acutifolia* but the regional distribution of the taxa has not been mapped.

Hydrocotyle gracilis R. & P. Fl. Peruv. 3: 26, *pl. 247, f. b.* 1802.

This species was based on a Ruiz & Pavón collection from Muña, Department of Huánuco. The type of the species has not been seen nor have any specimens been examined that might be referred to it. The illustration of the inflorescence in Ruiz and Pavón shows a plant with a branching peduncle which occasionally is borne on the petiole. Such a situation is not known to occur in the genus and is probably an error of the artist since the text describes the peduncles as solitary, opposite the leaves, erect, slender, shorter than the petioles, and bearing simple umbels. The foliage in the illustration is suggestive of that of *H. humboldtii*. It is possible that the type material was a mixture, since several hydrocotyles are known from Huánuco.

Hydrocotyle humboldtii Rich. Ann. Sci. Phys. 4: 173, *pl. 53, f. 6.* 1820, not *H. humboldtii* Willd. ex DC. 1830. *H. humboldtii* var. *macrophylla* Mathias, Brittonia 2: 216. 1936.

Stems slender, creeping, glabrous; leaves orbicular-peltate, 1.5–9 cm. in diameter, glabrous to hirsutulous or sparsely setose on the veins above and below, angulately 4–7-lobed, ¼–½ distance to petiole, the lobes triangular-ovate, acute or obtuse, frequently trilobulate, the apical lobule conspicuously elongate or the lobes subequal, the margins doubly crenate to crenate-serrate, the petioles slender, 1–22 cm. long, glabrous to setose at the apex; peduncles equaling or exceeding leaves, 2.5–17 cm. long, glabrous; umbels 15–30-flowered, the pedicels 1–6 mm. long, reflexed and spreading, glabrous; fruit suborbicular, 1–2 mm. long, 1–2.5 mm. broad, glabrous, the ribs distinct, acute, the stylopodium depressed.—F.M. Neg. 3420.

Cusco: Umantay (Muantay), 3500 m., *Rauh & Hirsch 1446.*—La Libertad: Pr. Bolívar: arriba de Bolívar, 3200 m., *López & Sagástegui 3224.*—Piura: Pr. Huancabamba: Catulún, *Acleto 0523.*

To the eastern and central cordillera of Colombia and in Santa Marta.

Hydrocotyle incrassata R. & P. Fl. Peruv. 3: 26. 1802, not *H. incrassata* Raf. 1817.

Stems slender, creeping, glabrate; leaves orbicular-reniform, not peltate, 0.5–2 cm. in diameter, glabrous or very sparingly hirsute above with whitish hairs 2–2.5 mm. long, glabrate below, shallowly 5–9-lobed, the lobes truncate, the margins thickened, whitish, slightly

involute, crenate, the crenations subequal, the apical crenations slightly bifid, the petioles slender, 1–5 cm. long, more or less hirsute; peduncles longer than the leaves, 1–4 cm. long, crispate-hirtellous; umbels compact, 10–20-flowered, the pedicels 0.5–1.5 mm. long, glabrous; fruit suborbicular, 1–1.5 mm. long, 1.5–2 mm. broad, glabrous, the ribs obscure, filiform, the stylopodium depressed.

Ancash: Pr. Bolognesi: abajo de Chiquián, Cerro Pasin, 3200 m., *Cerrate 2109*.—Junín: Pr. Tarma: Tarma, *Ruiz & Pavón*, type.—La Libertad: Pr. Bolívar: camino a las Quishuas, alrededores de Bolívar, 3000 m., *López & Sagástegui 3290*.

To central and eastern cordillera of Colombia and western Bolivia.

Hydrocotyle leucocephala Cham. & Schlecht. Linnaea 1: 364. 1826.

Illustrations: Vellozo, Fl. Flum. 3: *pls. 95, 96*. 1827 (as *H. dux* and *H. emarginata*). Mart. Fl. Bras. 11 (1): *pl. 76, I*. 1879. Pérez-Moreau, Lilloa 2: 429, *f. 2*. 1938.

This species is known from southern Mexico to Bolivia and Brasil. Peruvian specimens which have been referred here are apparently *H. alchemilloides*. However, it is possible that this taxon may occur in the Peruvian tropics and it should be watched for.

Hydrocotyle longipes Mathias & Killip, Brittonia 2: 209. 1936.

Stems relatively stout, creeping, glabrous; leaves peltate, orbicular-acuminate, 9–15 cm. in diameter, irregularly crenate, 12–13-nerved, glabrous above, hirsutulous below especially on veins, the petioles stout, 30–45 cm. long, sparingly hirsute above, glabrous below; peduncles shorter than the leaves, 30–35 cm. long, glabrous; umbels 80–100-flowered, the pedicels 10–12 mm. long, spreading and reflexed, glabrous; fruit suborbicular, about 1 mm. long, 2 mm. broad, glabrous, the ribs distinct, acute, the stylopodium conical.

Ayacucho: Pr. La Mar: dense forest, between Huanta and Río Apurimac, Aina, 1000 m., *Killip & Smith 22544*, type.

Known only from the type collection.

Hydrocotyle macbridei Math. & Const. Bull. Torrey Club 84: 191, *f. 2*. 1957.

Stems slender, creeping, glabrous to hirsute; the leaves apparently paleaceous and not peltate, 2.5–6.5 cm. in diameter, trifoliate, appearing 5-foliate because of the bipartition of the lateral leaflets, the

leaflets ovate, spinulose-dentate and shallowly lobed, the lateral bipartite, hirsute on both surfaces, the lobules obtuse, the petioles slender, 1–7 cm. long, retrorse-hirsute at least above; peduncles usually exceeding the leaves, slender, 1–5 cm. long, glabrous below, retrorse-hirsute at apex; umbels 10–15 mm. in diameter, 35–40-flowered; flowers green; involucre of several linear-lanceolate bractlets 2–3 mm. long, the pedicels slender, 3–5 mm. long, spreading and reflexed, glabrous; fruit transversely elliptical, 1–1.25 mm. long, 1.5–1.7 mm. broad, the ribs filiform, indistinct, the stylopodium depressed.

Amazonas: forest bank, loam over clay, 2900 m., mountain south of Tambo de Ventilla, *Pennell 15793*, type. *Podocarpus* wood, Taulia near Ventilla, 2500 m., *Rauh & Hirsch 2205*.

Known only from Amazonas, Peru.

Hydrocotyle palmata Mathias, Brittonia 2: 219. 1936.

Stems stout, creeping, glabrous to somewhat hirsute, especially at nodes; leaves not peltate, 4–10 cm. in diameter, trifoliate, appearing 5-foliate because of the extreme lobation of the leaflets, the leaflets lanceolate to cuneate, pinnately divided to incised-dentate, hirsute above with appressed ascending hairs, especially on the veins, hirsute below with divaricate hairs, the petioles slender, 3–7 cm. long, sparingly hirsute with spreading hairs; peduncles shorter to longer than the leaves, 4–9 cm. long, sparingly hirsute; umbels 20–35-flowered, the pedicels 3–6 mm. long, spreading and reflexed, glabrous; fruit transversely elliptical, 1–1.5 mm. long, 2–2.5 mm. broad, glabrous, the dorsal ribs obscure, the lateral ribs distinct, slender, the stylopodium depressed.

Amazonas: Pr. Chachapoyas: Chachapoyas, *Mathews 1637*, type. —Cusco: Pr. Urubamba: Puyupatamarca, 3600 m., *Vargas 2874*.

Terraces of ancient Inca ruins.

Hydrocotyle peruviana Wolff, Bot. Jahrb. 40: 283. 1908.

Stems slender, creeping, glabrous; leaves peltate, orbicular-acuminate, 7–12 cm. in diameter, angulately 7–9-lobed, the lobes triangular-acuminate, the apical lobe conspicuously elongate, crenate-serrate, hirsute above with appressed ascending hairs especially on the veins, hirsute below with spreading and divaricate hairs, the petioles slender, 5–20 cm. long, glabrous; peduncles shorter than the leaves, 4–11 cm. long, glabrous; umbels 25–40-flowered, the pedicels 4–6 mm. long, reflexed and spreading, glabrous; fruit suborbicular, about

1.5 mm. long and broad, glabrous, the ribs distinct, slender, acute, the stylopodium depressed.—F.M. Neg. 18260.

Cusco: Pr. Paucartambo: Pillahuata, *Vargas 1905*.—Puno: Pr. Sandia: Sandia, *Weberbauer 731*, type.

Cusco and Puno to adjacent Bolivia.

Hydrocotyle pusilla A. Rich. Ann. Sci. Phys. 4: 167, *pl. 52, f. 2.* 1820, not *H. pusilla* R. Br. 1820.

Stems filiform, creeping; leaves thin, orbicular-peltate, 3–20 mm. in diameter, glabrous to sparsely villous above, glabrous beneath, shallowly 5–8-lobed, the lobes crenate, the petioles slender, 5–35 mm. long, glabrous to densely retrorse-villous; peduncles about equaling the leaves, 5–15 mm. long, glabrous to retrorse-villous; umbels 2–6-flowered, the flowers sessile to subsessile; fruit transversely elliptical, about 0.5 mm. long, 1 mm. broad, orange, sparingly hirsute to glabrous, the ribs obsolete, the stylopodium depressed-conical.

Illustrations: Mart. Fl. Bras. 11 (1): *pl. 72, II.* 1879. Lilloa 2: 452, *f. 11.* 1938. Physis 11: 10, *f. 2, D–F.* 1933. Revista Mus. La Plata Bot. II, 5: 306, *f. 15K.* 1944.

Cusco: Pr. Convención: Potrero, 1250 m., *Vargas 12328*. Pr. Urubamba: Machu Picchu, 110 km. NW de Cusco, 2000 m., *Ferreyra 9904*.—Huánuco: Pr. Pachitea: Huacachi, Estación near Muña, *Macbride 4090*. Pr. Huánuco: common from summit of Carpish to Chinchao, along streams and on moist roadside banks, *Mathias 4009*.—Junín: Pr. Tarma: Huacapistana, *Weberbauer 2023*.—San Martín: Pr. Lamas: Cerro de Campaña, Tarapoto, *Spruce 4457*. Pr. Mariscal Cáceres: shady bank along roadside stream, 1–2 km. east of Funda Chela, on road between La Divisória and Aguaytía, *Mathias 3612*.

Moist, densely shaded areas to Haiti, Puerto Rico, Mexico, Brasil, and Uruguay.

Hydrocotyle quinqueloba R. & P. Fl. Peruv. 3: 25, *pl. 248, f. b.* 1802. *H. quinqueloba* var. *stella* Urb. in Thellung, Mem. Soc. Sci. Nat. Neuchatel 5: 392. 1913.

Stems stout, creeping to decumbent, glabrous to sparingly hirsute; leaves peltate, orbicular-acuminate, 5–12 cm. in diameter, angulately 5- (4–8-) lobed, the lobes triangular-acuminate, the apical lobe conspicuously elongate, serrate at the margins, glabrous to hirsutulous above especially on the veins, glabrous to densely hirsutulous below with divaricate hairs, the petioles slender, 5–15 cm. long, more

or less retrorse-hirsute; peduncles longer than the leaves, 7–10 cm. long, subglabrate; umbels 30–80-flowered, the pedicels 8–13 mm. long, glabrous; fruit transversely elliptical, about 2 mm. long, 2.5–3 mm. broad, glabrous, the ribs distinct, acute, the stylopodium depressed-conical.—F.M. Neg. 29670

Illustrations: Mart. Fl. Bras. 11 (1): *pl. 75, I.* 1879. Engl. & Prantl, Pflanzenf. 3 (8): 117, *f. 47c.* 1897.

Cajamarca: Pr. Jaén: Chirinos, *Raimondi 2309;* Cutervo, *Raimondi 8131.*—Huánuco: Pr. Pachitea: Tambo de Vaca, *Macbride 4457.* Pr. Huánuco: Pillao, *Ruiz & Pavón,* type.—Piura: Ayavaca, 2900–3000 m., *Weberbauer 6380.*

Trailing or vining through bushes, to Ecuador, Bolivia (*Brooke 6605:* Unduavi, La Paz to Coroico and Chulumani), and Brasil.

Hydrocotyle ranunculoides L. f. Suppl. 177. 1781, not *H. ranunculoides* Blume, 1826, Heyne, 1828. *H. batrachioides* DC. Prodr. 4: 667. 1830.

Plants glabrous; stems slender to somewhat fleshy, floating or creeping; leaves not peltate, suborbicular-reniform, 0.5–8 cm. in diameter, 5–6-lobed, the lobes crenate or lobulate, the petioles mostly slender, 1–34.5 cm. long; peduncles shorter than the leaves, 0.4–6 cm. long; umbels 5–10-flowered, the pedicels 1–3 mm. long, spreading and ascending; fruit suborbicular, 1–3 mm. long, 2–3 mm. broad, the ribs obscure, the stylopodium depressed.

Illustrations: Spreng. Sp. Umbell. *pl. 1.* 1818. Rich. Ann. Sci. Phys. 4: *pl. 58, f. 18, pl. 59, f. 20.* 1820. Mart. Fl. Bras. 11 (1): *pl. 76, III.* 1879. Publ. Tecn. Direcc. Agropec. La Plata 5 (2): 106, *f. 50.* 1948. Lilloa 2: 450, *f. 10.* 1938.

Cajamarca: Pr. Jaén: Pucará, 900 m., *Woytkowski 5689.*—Cusco: Pr. Canchis: San Pedro, 3600 m., *Vargas 12708.*—Junín: Pr. Junín: Laguna Junín, 4150 m., *Constance & Tovar 2381.*—Puno: Pr. Huancané: alrededores de Huancané, *Vargas 12519.*

Common in wet places and sporadic to Pennsylvania, Washington, and southern South America. Commonly known as *sombrerito de agua.*

Hydrocotyle steyermarkii Math. & Const. Bull. Torrey Club 78: 306, *f. 2.* 1951.

Stems slender, creeping, rufo-villous; leaves suborbicular to reniform, slightly broader than long, not peltate, 7.5–16 cm. in diameter,

villous above and below on the veins, densely villous when young, 5-nerved, angulately 5–7-lobed about ½ of distance to sinus, the lobes deltoid, 3–5-lobulate, spinulose-serrate, acute to subacuminate, the petioles 7–32 cm. long, densely villous especially above, with divaricate hairs; peduncles slender, glabrous, to very sparingly villous, 5–9.5 cm. long, shorter than the leaves; umbels 30-flowered, the pedicels slender, 4–6 mm. long, reflexed and spreading, glabrous; fruit suborbicular, 1.5 mm. long, 2 mm. broad, glabrous, the ribs evident, the stylopodium depressed.

Huánuco: Pr. Huánuco: Carpish, 2650 m., shore of a rivulet, *Asplund 12844;* above Chinchao toward summit of Carpish in dense shade, bank of small stream, *Mathias 4026*.

To Ecuador.

Hydrocotyle umbellata L. Sp. Pl. 1: 234. 1753. *H. umbellulata* Michx. Fl. Bor. Am. 1: 161. 1803.

Plants glabrous; stems slender to somewhat fleshy, floating or creeping; leaves orbicular-peltate, 5–75 mm. in diameter, crenate or crenately lobed, the petioles mostly slender, 0.5–40 cm. long; peduncles usually longer than the leaves, 1.5–35 cm. long; umbels rarely with a slight proliferation along the main axis, many-flowered, the pedicels 2–25 mm. long, spreading to reflexed; fruit suborbicular, 1–2 mm. long, 2–3 mm. broad, the ribs distinct, obtuse, the stylopodium depressed.

Illustrations: Spreng. Sp. Umbell. *pl. 1*. 1818. Rich. Ann. Sci. Phys. 4: *pl. 52, f. 3, pl. 53, f. 4*. 1820. Britt. & Brown, Ill. Fl. ed. 2, 2: 649. 1913. Bettfreund, Fl. Argentina 1: *pl. 18*. 1898. Vellozo, Fl. Flum. Icon. 3: *pl. 91*. 1827.

Cajamarca: Pr. Celendín: Celendín, 2750 m., *López & Sagástegui 3106*.—Lima: Pr. Lima: Callao, *Wilkes Expedition*. Pr. Chancay: Huaral, borde de acequia, *"L. A. G."*

Frequent along irrigation ditches near the coast. Widespread in coastal areas in North and South America and sporadically introduced into the Old World.

Hydrocotyle urbaniana Wolff, Bot. Jahrb. 40: 283. 1908.

Stems slender, creeping, sparsely pilosulose; leaves orbicular-reniform, not peltate, 3–8 cm. in diameter, sparsely hirsute on veins with curved hairs, 7–9-lobed ¼ to ⅓ distance to sinus, the lobes ovate to ovate-rounded or broadly ovate-lanceolate, trilobulate, serrate,

crenate-serrate or doubly serrate, the petioles slender, 6–22 cm. long, sparsely pilose below, more densely so above; peduncles shorter than or equaling the leaves, 8–10 cm. long, pilose; umbels 20–25-flowered, the pedicels slender, 2–5 mm. long, glabrous; fruit orbicular-reniform, 1.2–2 mm. long, 2–2.5 mm. broad, glabrous, the ribs filiform, the stylopodium depressed.—F.M. Neg. 3422.

Cajamarca: Pr. Hualgayoc: supra San Miguél, 2800–3000 m., *Weberbauer 3941*, type.—Cusco: Pr. Cusco: hills of Saxihuaman, 3500 m., *Herrera 2345*.—Huancavelica: Pr. Tayacaja: Chuspi-Tocos entre Colcabamba y Paucarbamba, 2800–2900 m., *Tovar 2043*.

Known only from the Andes of Peru.

Hydrocotyle vestita Mathias & Killip, Brittonia 2: 222. 1936.

Stems stout, creeping, rufo-hirsute with divaricate hairs; leaves orbicular-acuminate, not peltate, 3–9 cm. in diameter, hirsute above and below on veins with divaricate hairs, shallowly and subangulately 10–12-lobed, the terminal lobe elongate-acuminate, the margins doubly crenate-serrate, the petioles stout, 2–15 cm. long, densely rufo-hirsute with divaricate and reflexed hairs; peduncles longer than the leaves, 13–20 cm. long, hirsute below, villosulous above; umbels 50–70-flowered, the pedicels filiform, 5–8 mm. long, reflexed and spreading, glabrous; fruit orbicular, 1–1.5 mm. broad, glabrous, the ribs distinct, acute, the stylopodium conical.

Ayacucho: Pr. La Mar: Aina, between Huanta and Río Apurimac, 800 m., dense forest, *Killip & Smith 22759*, type.

Known only from the type collection.

LILAEOPSIS Greene

References: A. W. Hill, The genus *Lilaeopsis:* a study in geographical distribution. Jour. Linn. Soc. Bot. 47: 525–551, *f. 1–16, pls. 19, 20*. 1927.

Crantzia Nutt. Gen. 1: 177. 1818, not Scopoli, 1777, Swartz, 1788, Schreber, 1789. *Hallomuellera* Kuntze, Rev. Gen. 1: 267. 1891.

Small, tufted, glabrous, caulescent perennials; from long, creeping rhizomes. Leaves reduced to fistulose, transversely septate phyllodes. Inflorescence of simple, loose, axillary few-flowered umbels. Peduncles slender, shorter or longer than the leaves. Involucre of a few small bracts. Pedicels slender, ascending to reflexed and pendulous. Flowers white; petals orbicular, acute or obtuse, without a

narrower inflexed apex; calyx teeth small; styles very short, the stylopodium depressed or obsolete. Carpophore wanting. Fruit globose or ovoid, slightly compressed laterally or nearly terete, glabrous; dorsal ribs filiform, the lateral very thick and corky next to the commissure; vittae usually solitary in the intervals, 2 on the commissure; seed terete in transection, the face plane; ribs each with a small group of strengthening cells.

A genus of perhaps 20 morphologically similar species, occurring in aquatic sites throughout the world.

Lilaeopsis andina Hill, Journ. Linn. Soc. Bot. 47: 540, *pl. 20, f. 3, text fig. 7.* 1927. *Crantzia lineata* Nutt. sensu Gay, Fl. Chile 3: 127. 1847. *C. lineata* var. *subulata* Wedd. Chlor. And. 2: 202, *pl. 68, f. 1.* 1861. *Lilaeopsis attenuata* Fernald, Rhodora 26: 94. 1924, as to Andean specimens. *L. andina* var. *inundata* (Mandon) Hill, Journ. Linn. Soc. Bot. 47: 541, *pl. 47, text fig. 7a.* 1927. *L. andina* f. *subulata* (Weddell) Pérez-Moreau, Lilloa 1: 292, *pl. 2.* 1937, for Peruvian specimens.

Plants low, perennial, acaulescent to 2 cm. high; leaves to 1.5 cm. long, obscurely septate in dried material, filiform, obtuse, glabrous; petiole sheathing below; peduncles about 5 mm. long, the umbel 4–5-flowered, the flowers yellowish; involucre obscure or wanting; pedicels about 4–5 mm. long; fruit ovoid, 1.5–2 mm. long and broad, with 2 prominent corky lateral ribs, thickened and much broader than the dorsal and intermediate ribs.

Illustrations: Hook. f. Fl. Antarct. 2: *pl. 100.* 1845. Rep. Princeton Exped. Patagonia 1896–99, 8 (2): *f. 80.* 1903–06.

Cajamarca: Pr. Cajamarca: cerca Baños del Inca, ca. 6 km. de Cajamarca, 2600–2650 m., *Ferreyra 3241.*—Cusco: Pr. Espiñar: alrededores de Yauri, *Vargas 12078.*—Pasco: Pr. Pasco: muddy shore, Cerro de Pasco, 4300 m., *Asplund 11763.*—Puno: Pr. Azangaro: Orillas del lago Arapa, 3900–4000 m., *Aguilar 135.*

To Bolivia and Argentina.

NEONELSONIA Coult. & Rose

Reference: Mathias & Constance, North American Flora 28B: 73–74. 1944.

Tall, erect, herbaceous but with woody roots, caulescent, branching, essentially glabrous perennials. Leaves petiolate, membranaceous, ternately or ternate-pinnately compound, the leaflets ovate or ovate-lanceolate, crenate, serrate, or lobed. Petioles sheathing.

Inflorescence of loose compound umbels; peduncles terminal and lateral, or some umbels sessile. Involucre wanting. Fertile rays few, slender, spreading, the umbels often proliferating. Involucel of several filiform bractlets longer than fruit. Fertile pedicels few, filiform. Flowers greenish-yellow; petals obcordate with a narrower inflexed apex; calyx teeth inconspicuous; styles short, the stylopodium depressed-conic to conical. Carpophore 2-parted to base. Fruit ellipsoid-cordate, strongly flattened laterally, glabrous but wrinkled and 5-ridged; ribs filiform; vittae large, solitary in the intervals and with a small accessory tube on the slope of each adjacent ridge; seed subterete in transection, the face involute.

A genus of two described species ranging from Mexico to Peru.

Neonelsonia acuminata (Benth.) Coult. & Rose; Drude in Engl. & Prantl, Pflanzenf. 3 (8): 167. 1898. *Arracacia acuminata* Benth. Pl. Hartw. 187. 1856.

Large, robust, sprawling to erect perennial herb to 3 m. tall; basal leaves not seen; cauline leaves ovate, up to 2.2 dm. long, ternate, then 1–2-pinnate, the leaflets ovate to lanceolate, acute to acuminate, cuneate to rounded at the base, the lower distinct and petiolulate, the uppermost sessile and confluent, 2–7 cm. long, 1–3.5 cm. broad, spinulose-serrate, to spinulose-incised, glabrous above, glabrous to squamulose on the veins below; petioles 8–10 cm. long, at least the lower 1/3 sheathing; upper leaves similar, the petioles sheathing; umbels axillary and sessile in the upper axils, or terminal with peduncles to 7 cm. long, squamulose at apex; involucre wanting, or occasionally of a single leaf sheath; fertile rays 4–9, slender, spreading-ascending, unequal, 3–8 cm. long, glabrous to squamulose; involucel of conspicuous filiform bractlets to 3 cm. long, exceeding mature fruit; fertile pedicels 2–6, spreading, 7–11 mm. long; sterile rays and pedicels numerous, conspicuous; flowers yellow to green, the petals obovate to oblanceolate with an acuminate, inflexed tip; stylopodium conspicuous, conical, the styles stout, about equaling the stylopodium, slightly recurved; fruit cordate, about 5 mm. long and 5 mm. broad at base, glabrous, the ribs prominent.—F.M. Neg. 28316.

Cusco: Pr. Paucartambo: Disto. Marcachea, near Achirani, moist slopes, *Vargas 11162;* Pilco, 3000 m., *Woytkowski 314.* Pr. Quispicanchis: Marcapata, 3200 m., *Weberbauer 7785.* Pr. Urubamba: Machu Picchu, 2040 m., *Vargas 6242,* 2000 m., *Vargas 2102.*

To Colombia. Locally known as *arracacha del monte.*

NIPHOGETON Schlecht.

References: Math. & Const. A revision of the Andean genus *Niphogeton* (Umbelliferae), Univ. Calif. Publ. Bot. 23: 405–426. 1951; The Andean genus *Niphogeton* (Umbelliferae) revisited, Brittonia 14 (2): 148–155. 1962.

Oreosciadium Wedd. Chlor. And. 2: 203. 1857. *Urbanosciadium* Wolff, Bot. Jahrb. 40: 302. 1908. *Triphylleion* Süsseng. Bot. Jahrb. 72: 278. 1942.

Low, cespitose and bushy to slender and scrambling, caulescent to acaulescent perennial herbs, usually branching at or near the sometimes woody base, the branches erect or ascending, the herbage green to glaucous, glabrous to puberulent, scaberulous or hirsutulous, the foliage usually subcoriaceous; basal leaves rosulate to loosely clustered, linear-oblong or lanceolate to orbicular or obovate, simple, ternate, pinnate, or pinnately decompound; petioles stout or slender, sheathing at least toward the base; leaves rather remote on vigorously growing shoots, the petioles usually wholly sheathing and often conspicuously inflated in the upper cauline leaves; inflorescence terminal and lateral, rarely terminal only, often corymbose, with usually one to several lateral peduncles arising in the axils of the cauline leaves, the peduncles slender to stout; involucre of 2–15 linear-filiform to obovate, entire, lobed, or pinnatifid bracts usually exceeding the rays; rays (1–) 3–20, angled, spreading, spreading-ascending, or ascending, subequal to unequal; involucel of 1–7 linear to obovate, entire to pinnatifid bractlets, usually exceeding the pedicels; pedicels 1–10, angled, spreading or spreading-ascending, subequal to unequal; calyx teeth obsolete; petals linear-lanceolate to oval, obtuse or acute but without a narrowed, inflexed apex, white or with a colored midvein; stylopodium depressed- to low-conic, the styles short, spreading or erect; carpophore stout, divided to the base, the halves divergent at the apex; fruit oblong to ovoid, compressed laterally, the ribs usually prominent, acute or obtuse to corky-winged; vittae solitary in the intervals, 2 on the commissure, sometimes a smaller vitta in the apex of each rib, the face plane or concave.

A genus of some sixteen species in the Andes at elevations of 2000–4500 meters from Bolivia to Venezuela, and to Costa Rica (*Kupper 1180*, Chirripó Grande, 3450 m., type of *Triphylleion chirripoi* Süsseng.).

Leaves ternately lobed, the lobes essentially entire; rays abortive.
N. azorelloides.

Leaves pinnately decompound; rays well developed.

Plants low, bushy, 0.5–3.5 dm. tall; peduncles up to 1 dm. long, little exceeding foliage; involucre exceeding rays, the rays 0.3–2.5 cm. long.

Plants glabrous to minutely scaberulous or puberulent; leaf sheaths and bracts not prominently scarious and inflated; involucre shorter than fruit; stylopodium low-conic, the styles 0.2–0.5 mm. long; fruit ribs not corky-thickened. *N. dissecta dissecta.*

Plants densely scaberulous; leaf sheaths and bracts prominently scarious and inflated; involucre exceeding fruit; stylopodium depressed conic, the styles 0.5–1 mm. long; fruit ribs corky-thickened..... *N. scabra.*

Plants slender, 3–10 dm. tall; peduncles 1–3 dm. long, greatly exceeding foliage; involucre much shorter than rays, the rays 1–6.5 cm. long.

Plants glabrous, the peduncles glabrous beneath the umbel; rays spreading-ascending; fruit 3–4 mm. long, 2–2.5 mm. broad. *N. magna.*

Plants scaberulous, the peduncles densely scaberulous beneath the umbel; rays rather strictly ascending; fruit 5 mm. long, 2.5–3 mm. broad..... *N. stricta.*

Niphogeton azorelloides Math. & Const. Brittonia 14: 150, *f. 2.* 1962.

Cespitose, subcaulescent, mat-forming dwarf perennial herb 2–4 cm. tall, glabrous, the foliage subcoriaceous, yellowish-green; leaves densely clustered, oblong-oval, 4–9 mm. long, 3–5 mm. broad, deeply ternately lobed, the lobes linear-oblong, acute, the middle lobe exceeding the laterals, 2–6 mm. long, 1 mm. or less broad, infolded longitudinally, the petioles slender, 5–15 mm. long, the lower ⅔ to ½ forming a linear-oblong, scarious-winged sheath; inflorescence terminal, with 1–3 peduncles 5–15 mm. long; involucre of a pair of linear, entire bracts 2–5 mm. long, shorter than the umbel; umbel compound with 1–3 ascending rays 1–2 mm. long, or these abortive and the umbel simple; involucel of 1 to several bractlets like the bracts, 2–3 mm. long, about equaling the pedicels; pedicels 1–3, 2–3 mm. long, stout, ascending, subequal; petals broadly oval, obtuse, white; stylopodium low conic, purplish, the styles 0.2–0.3 mm. long, spreading; fruit ovoid, ca. 2 mm. long, 1.5 mm. broad, with a thin, loose, shining pericarp, the ribs obscure, filiform, rounded, narrower than

the intervals; vittae rather large; seed slightly channeled beneath the vittae, the seed face plane.

Piura: Pr. Huancabamba: hab. páramo, 3600 m., Cordillera de Huancabamba, *Friedberg 6146*.

Southernmost Ecuador and northernmost Peru.

Niphogeton dissecta (Benth.) Macbr. var. **dissecta**, Macbr. Field Mus. Bot. 8: 126. 1930. *Petroselinum dissectum* Benth. Pl. Hartw. 188. 1845. *Niphogeton andicola* Schlecht. Linnaea 28: 481. 1856. *Oreosciadium dissectum* Wedd. Chlor. And. 2: 204, *pl. 69 C.* 1857. *O. dissectum β asperum* Wedd. l.c. *Apium dissectum* Drude in Engl. & Prantl, Pflanzenf. 3 (8): 185. 1897. *A. weberbaueri* Wolff, Repert. Sp. Nov. 17: 175. 1921. *Niphogeton dissecta* var. *aspera* Macbr. Field Mus. Bot. 8: 125. 1930. *N. weberbaueri* Macbr. l.c. 126.

Bushy to slender perennial herb 0.5–3.5 dm. tall, usually prolifically branched, glabrous to somewhat scaberulous or puberulent, the foliage bright green; leaves loosely clustered to subrosulate, oblong to ovate, 1.5–8 cm. long, 1–7 cm. broad, 1- or 2-pinnate, the leaflets cuneate to obovate, 3–12 mm. long, 1.5–8 mm. broad, deeply lobed or pinnatifid, the ultimate divisions linear, 1–1.5 mm. broad, apiculate to mucronate; petioles slender, 2–15 cm. long, the lower ¼ to ½ in basal leaves forming an oblong sheath, the uppermost petioles wholly and often rather prominently sheathing; inflorescence terminal and lateral, corymbose, with 1–6 lateral peduncles arising in axils of cauline leaves, 1–10 dm. long; involucre of 3–7 bracts 4–35 mm. long, linear to spatulate or obovate, deeply lobed to pinnatifid, rarely some entire, exceeding rays; rays 5–12, 3–30 mm. long, spreading to spreading-ascending, unequal; involucel of 3–5 bractlets, 1–10 mm. long, entire to lobed or pinnatifid, exceeding pedicels; pedicels 2–10, 2–15 mm. long; petals ovate-lanceolate, acute, white or with a green midvein; stylopodium low-conical, the styles 0.2–0.5 mm. long, spreading; fruit oblong to ovoid, 2–4 mm. long, 1.5–2.5 mm. broad, the ribs prominent, acute, narrower than to about equaling the intervals; vittae large, sometimes a smaller vitta in the apex of each rib; seed channeled under the vittae, the face shallowly concave.—F.M. Negs. 3474, 17187, 17188.

Cusco: Agapata, ad limites niv. aetern. summ. Cordill., *Lechler 1976*, type of *N. andicola*. Pr. Quispicanchis: near glaciers of the Ausangate, 4500–4600 m., *Weberbauer 7768;* Marcapata, Huall-Hualla, 4150 m., *Vargas 11661;* Cordillera Ausangate, 4500 m., *Rauh 1212;* Valle del Paucartambo, Hacienda Lauramarca, 4500 m.,

Herrera 2323.—Junín: Pr. Tarma: auf Hochgebirgssteppen, W. Huacapistana, *Weberbauer 2258*, type of *A. weberbaueri.*

To Venezuela and Bolivia in the Andes.

This species, which Wolff termed a "species collectiva," has the broadest range of any member of the genus, is perhaps the best-represented in herbaria, and is certainly the most variable. The variations are primarily in the size and growth form of the plants, in the size, shape, and dissection of the leaves, in the amount of roughness or puberulence of the herbage, and in the number and size of various structures. The type of *N. andicola*—a name whose application has been somewhat confused—appears to have been derived from an essentially glabrous population. Nothing in the original description of *Apium weberbaueri* appears to be sufficiently distinctive to keep this proposed segregate out of *N. dissecta* as here circumscribed.

Niphogeton magna Macbr. Field Mus. Bot. 8: 126. 1930.

Stout perennial herb 4–6 dm. tall, glabrous, the foliage bluish-green; leaves loosely clustered at base, oblong-oval, 10–20 cm. long, 6–8 cm. broad, pinnately decompound, the ultimate divisions linear, acute, 2–6 mm. long, 1 mm. or less broad, the petioles slender, 10–20 cm. long, the lower ⅓ to ¼ in basal leaves forming a linear-oblong, scarious-winged sheath, the upper petioles wholly sheathing; inflorescence terminal and lateral, with 1 or 2 lateral peduncles arising in axils of cauline leaves, 10–30 cm. long; involucre of apparently few bracts about 1 cm. long, sublinear, entire or pinnate, shorter than rays; rays 8–20, 2.5–5 cm. long, spreading-ascending, unequal; involucel of a few bractlets like the bracts, about 4 mm. long, entire, exceeding pedicels; pedicels 5–10, 2–4 mm. long, spreading-ascending, unequal; petals and stamens not seen; stylopodium depressed-conical, the styles about 1 mm. long, spreading; fruit ovoid, 3–4 mm. long, 2–2.5 mm. broad, the ribs corky-thickened, obtuse, much broader than the intervals; vittae rather large; seed face shallowly concave.

Junín: Pr. Yauli: La Oroya, at base of limestone cliff, *Macbride & Featherstone 968*, type.

This very distinct species appears to connect *N. dissecta* and *N. scabra* with *N. stricta*, with which it agrees in size and other characters. It is known only from the type collection, made at about 3700 meters elevation. Since this is in an easily accessible area it is hoped that Peruvian collectors will watch particularly for it.

Niphogeton scabra (Wolff) Macbr. Candollea 5: 395. 1934. *Ligusticum peucedanoides* Presl γ *longifolium* Presl ex DC. Prodr. 4: 159. 1830. *Oreosciadium scabrum* Wolff, Bot. Jahrb. 40: 305. 1908. *Apium scabrum* Wolff, Repert. Sp. Nov. 17: 175. 1921.

Low, bushy perennial herb 0.5–2.5 dm. tall, branching prolifically, the branches stout, conspicuously scaberulous throughout, the foliage light green; leaves densely rosulate at base, oblong-oval, 2.5–6 cm. long, 2–4 dm. broad, 1- or 2-pinnate, the leaflets cuneate to obovate, 5–15 mm. long, 2–8 mm. broad, apiculate, strongly scaberulous on margins and veins; petioles 3–10 cm. long, the lower half to the entire petiole in basal leaves with an inflated, scarious, scaberulous sheath, the upper petioles broadly inflated, wholly sheathing; inflorescence terminal and lateral, densely corymbose, with 1 or 2 lateral peduncles arising in axils of cauline leaves, the peduncles quite stout, 1.5–10 cm. long; involucre of about 5 bracts, 15–30 mm. long, spatulate to obovate, with a prominently inflated scarious sheath and a pinnatifid blade, exceeding umbellets, prominently scaberulous; rays 8–12, 5–25 mm. long, spreading or spreading-ascending, unequal; involucel of about 5 bractlets like the bracts, 5–15 mm. long, entire or lobed, conspicuously scaberulous, exceeding umbellets; pedicels 3–7, 1–5 mm. long, spreading or spreading-ascending, unequal; petals oval, acute, white with a green midvein; stylopodium depressed-conic, the styles 0.5–1 mm. long, spreading; fruit ovoid, 3–4 mm. long, 2–2.5 mm. broad, with a thin, loose, shining pericarp, the ribs very prominent and somewhat corky-thickened, about equaling the intervals; vittae moderately large; seed face shallowly concave.—F.M. Negs. 17189, 31806.

Ancash: Pr. Bolognesi: puna, Pariac, Pampa de Lampas, Chiquián, 4300 m., *Cerrate 1512;* laguna de Huamanhueque, arriba de Aquia, puna, 4400 m., *Ferreyra 12146.*—Cusco: Pr. Quispicanchis: Valle del Paucartambo, hacienda Ccapana, 4200 m., *Herrera 2183.*—Huancavelica: Pr. Huancavelica: puna, Huaytanayocc, Tansiri, cerca a Manta, 4450 m., *Tovar 1172, 2558.*—Huánuco: Pr. Dos de Mayo: Huayhuash, 4800–5200 m., *Rauh & Hirsch 1884.*—Junín: Pr. Yauli: hillside, 15,500 ft., Morococha, near Mount Puipui, *Grant 7586;* rocks, Ticlio Pass, 4900 m., *Rauh & Hirsch 302;* ad viam ferream inter oppida Lima et Oroya ad hacienda Arapa prope Yauli, ad rupes, 4400 m., *Weberbauer 350,* type.—Lima: Pr. Huarochirí: "Oberhalb der Stadt Lima," *Weberbauer 5158;* Casapalca, 15,500 ft., *Macbride & Featherstone 838.*—Pasco: Pr. Pasco: Huarón, 14,000 ft., *Macbride & Featherstone 1127.*

The low bushy habit, the crowded inflorescence, the roughness of the herbage, the stout stems and peduncles, and the conspicuously scarious and inflated sheaths and bracts combine to make this a markedly distinct species. The fruit is also strikingly dissimilar to that of *N. dissecta,* although the two species have been confused in the past. Known locally as *pampa-culandro.* Rocky bunch-grass slopes in the punas of central Peru.

Niphogeton stricta (Wolff) Math. & Const. Univ. Calif. Publ. Bot. 23: 419. 1951. *Urbanosciadium strictum* Wolff, Bot. Jahrb. 40: 302. 1908.

Slender perennial herb to 2 m. tall, more or less scaberulous throughout, the foliage bright green above, paler beneath; leaves loosely clustered at the base, ovate-lanceolate, 5–8 cm. long, 4–7 cm. broad, pinnately decompound, the ultimate divisions lanceolate, acute, 1–3 mm. long, 3 mm. or less broad, the petioles slender, 4–25 cm. long, the lower ½ to ⅓ in the basal leaves forming a broadly oblong, scarious-winged sheath, the upper petioles wholly sheathing; inflorescence terminal and lateral, with 1 or 2 lateral peduncles arising in the axils of the cauline leaves, 6–20 cm. long, densely scaberulous beneath the umbel; involucre of 2 bracts 10–30 mm. long, ovate-lanceolate, foliaceous, caducous, the blade bipinnate, much shorter than the rays; rays 7–13, 1–6.5 cm. long, rather strictly ascending, unequal; involucel of 3–6 linear-lanceolate, entire bractlets 3–5 mm. long, scaberulous, exceeding the pedicels, caducous; pedicels 5–10, 2–7 mm. long, spreading-ascending, unequal; petals oval, obtuse, white with a purplish midvein; stylopodium low-conic, the styles about 1 mm. long, spreading; fruit ovoid, about 5 mm. long, 2.5–3 mm. broad, the ribs prominent, acute, somewhat corky, broader than the intervals; vittae large; seed channeled under the vittae, the face shallowly concave.—F.M. Neg. 3471.

Ancash: inter Samanco et Caraz infra hacienda Cajabamba, *Weberbauer 3153,* type. Pr. Bolognesi: Tinya, Valle del Fortaleza, Disto. de Cajacay, 3900 m., *Cerrate 2586;* Capillapunta, cerro al s. d. Chiquián, 3560 m., *Cerrate 147, Ferreyra 5704* (*3704*).—Lima: Pr. Huarochirí: Río Blanco, 12,000 ft., *Macbride & Featherstone 641;* Infiernilla, 3400 m., *Asplund 11509;* alrededores de Santiago cerca Huarochirí, 3600–3700 m., *Cerrate & Tovar 1907.* Pr. Lima: near Antaicocha, Cerro Colorado, east of Canta, 3600–3800 m., *Pennell 14649.*

Known only from the Andean páramos of northern and central Peru.

OREOMYRRHIS Endl.

Reference: Math. & Const. The genus *Oreomyrrhis*, Univ. Calif. Publ. Bot. 27: 347–416. 1955.

Caldasia Lag. Amen. Nat. 2: 99. 1821, not Willd. 1807, not Mutis 1810.

Low, often cespitose and acaulescent to moderately tall and conspicuously caulescent perennial herbs; usually from taproots, branching only at or near the base, or not at all, to branching profusely well above the base, the branches spreading to erect, glabrous to hoary-tomentose, the foliage herbaceous; basal leaves usually densely rosulate, narrowly oblong to oval, pinnatisect with 5 to 23 opposite leaflets, these entire to pinnatisect; cauline leaves, if present, like the basal; petioles stout or slender, conspicuously sheathing; inflorescence terminal, sometimes corymbose, or terminal and lateral, the peduncles slender to stout, each bearing a simple terminal umbel; involucre of 4–10 linear-lanceolate to obovate, entire to pinnatifid, connate bracts longer than the flowers, erect to reflexed in fruit; pedicels stout to filiform, spreading-ascending or spreading; calyx teeth obsolete; petals oblong to oval, acute, with an abruptly narrowed and slightly incurved apex, white, usually with a colored midvein, yellow, rose-tinged, maroon, or purple; stylopodium more or less conical, the styles short to slender, their tips approximate to divaricate; carpophore rather stout, divided to base or merely bifid, the halves approximate; fruit oblong to ovoid, slightly compressed laterally, the ribs moderately prominent, acute to obtuse, sometimes slightly corky, unwinged; vittae one to several in the intervals, 2 or more on the commissure; seed subterete in transection, the face nearly plane to variously concave.

A genus of some 23 species ranging from Taiwan to New Zealand and from Fuegia and the Falkland Islands to southern Mexico. Only one species, in our view, occurs in the Andes.

Oreomyrrhis andicola (Kunth) Hook. f. Fl. Antarct. 2: 288, *pl. 101*. 1844–47, as to name, the combination incorrectly attributed to Endlicher. *Myrrhis andicola* Kunth in HBK. Nov. Gen. & Sp. 5: 13, *pl. 419*. 1821. *Caldasia chaerophylloides* Lag. Amen. Nat. 2: 99. 1821. *C. andicola* Lag. ex DC. Coll. Mém. 5: 60, *pl. 2, f. j 1, 2, 3*. 1829. *C. chaerophyllaea* DC. Prodr. 4: 229. 1830. *C. chaerophyllaea α glabriuscula* DC. l.c. *C. chaerophyllaea β hirsuta* DC. l.c. *C. lasiopetala* Lag. ex DC. l.c. *Oreomyrrhis lasiopetala* Gray, Bot. Wilkes

Exped. 1: 712. 1854. *O. andicola β tomentosa* Wedd. Chlor. And. 2: 206. 1861. *O. daucoides* Urban, Linnaea 43: 303. 1880–1882.

Plants 3–50 cm. high from a usually stout taproot, depressed-cespitose and acaulescent to strongly caulescent and umbellately branched at base and well above, the branches spreading to erect; foliage white-tomentose to grayish-hirsute or -hirsutulous to green and glabrate (completely glabrous in one or two plants observed), the hairs spreading or appressed, the sheaths ciliate; leaves narrowly oblong to broadly oval or ovate, 0.5–8 cm. long, 0.4–3 cm. broad, pinnate with 9–17 oblong to oval or ovate leaflets 1.5–15 mm. long, 1–10 mm. broad, entire or more commonly 1–2-pinnatifid with ovate to linear, acute, usually mucronate, remote to crowded ultimate divisions, the petioles stout to slender, 0.5–10 cm. long, usually shorter than the blade, narrowly to broadly scarious-sheathing at base; peduncles 2–80, stout to slender, 1–40 cm. long, hirsute or hirsutulous with reflexed hairs, spreading to erect, mostly longer than the petioles; involucre of 6–10 narrowly lanceolate or oblong to obovate, acute or obtuse, entire or shallowly few-toothed to incisely lobed or deeply pinnatisect bracts, appressed-hirsute or -hirsutulous on the back and sparsely so or more frequently glabrate within, ciliate, often a little auriculate and laterally imbricated at base, united their lower $^1/_5$–$^1/_2$, erect to reflexed, shorter than mature fruit; flowers usually 10–30, shorter than the involucre, the petals white with a colored midvein, or rose-tinged or rose-colored, generally more or less pubescent on the back; stylopodium usually low-conical (conical to depressed), the styles short, their tips usually divergent, the stylopodium and style together 0.2–0.5 mm. long; pedicels 1.5–30 mm. long, stout to slender, usually unequal, shorter than to more than twice as long as the involucre, hirsute or hirsutulous with loosely to closely appressed, afflexed hairs, or these rarely spreading or even reflexed; fruit usually 2–20, oblong to ovoid, 3–5 mm. long, 1.5–2 mm. broad, commonly tapering toward apex, glabrous or with a few scattered hairs, or rarely both ovaries and mature fruits densely cinereous-hirsutulous, the carpels with 5 prominent, acute to somewhat rounded, often slightly corky ribs narrower than the intervals; vittae usually solitary, but occasionally 2 or 3 in the intervals and 2 (occasionally several) on the commissure, the seed face narrowly to broadly and deeply to shallowly concave.

Illustrations: Weberbauer, Vegetat. Erde 12: 181, *f. 20;* 203, *f. 35g.* 1911; El Mundo Veg. And. Per. 344, *f. 18;* 386, *f. 46g.* 1945. Math. & Const. Univ. Calif. Publ. Bot. 27: 366, *f. 6.* 1955.

Ancash: Pr. Bolognesi: Condorcochas, alrededores de la Laguna, Disto. Huasta, puna, 4000 m., *Cerrate 2717;* Tinya, valle del Fortaleza, pradera con arbustos, 4100 m., *Cerrate 2692;* Mahuay, 3700 m., *Cerrate 2214.*—Apurimac: Pr. Abancay: Sairite, 3650 m., *Vargas 9038;* entre Uruhuasi y Abancay, km. 24, 3400 m., *Ferreyra 2785.* —Ayacucho: Pr. Huananga: 75 mi. south of Ayacucho on road to Abancay, beginning descent to Ocros, 4000 m., *Hutchison 1708.*— Cusco: Umantay (Muantay), 4000 m., *Rauh & Hirsch 1442.* Pr. Cusco: Cusco, *Herrera.* Pr. Paucartambo: Hacienda Churu, *Herrera;* laderas de Paucartambo, 3400 m., *Vargas 905.* Pr. Urubamba: along the road, Puyupata-Tuncaipata, 3400 m., *Vargas 2936.* Pr. Anta: Cordillera Salcantay, 4200 m., *Rauh 1402;* abra de Huillque, 3600 m., *Vargas 5497.*—Huancavelica: Pr. Tayacaja: arriba de Hda. Toros entre Colcabamba y Paucarbamba, 3500–3600 m., *Tovar 2082.* Pr. Huancavelica: alrededores de Huancavelica, Vichi, 3700–3800 m., *Proaño.*—Huánuco: Pr. Dos de Mayo: puno, Chavinillo, 3900 m., *Woytkowski 939.*—Junín: Pr. Yauli: near Paso de Anticona, *Constance & Tovar 3584;* Incavacuna, *Constance & Tovar 3587;* vicinity of Oroya, *Kalenborn 62a,* among rocks, *62;* Anticona, piso subnival, 4800 m., *Ferreyra 10956.* Pr. Huancayo: Quebrada de Occopilla, *Soukup 3638.* Pr. Tarma: puna, Oroya-Tarma, 4200 m., *Rauh & Hirsch 265a;* Tarma, cerros al este de Palca, 2700–3000 m., *Weberbauer 2445.*—La Libertad: Pr. Huamachuco: Cerro Consuz, Jalca de Huaguil, 4000 m., *López & Sagástegui 2719.*—Lima: Baños, Casa Cancha and Culnai, *Wilkes Exped.* Pr. Huarochirí: Casapalca, 15,500 ft., *Macbride & Featherstone 839;* Chicla, *Ball;* pradera, Chicre cerro al norte de Huarochirí, 3740 m., *Cerrate & Tovar 1818;* Río Blanco, 12,000 ft., *Macbride & Featherstone 743;* Viso, 10,000 ft., *Macbride & Featherstone 591.* Pr. Yauyos: entre Pallca y Huacracocha, Tupe, puna, 4200 m., *Cerrate 1262.*—Pasco: Pr. Pasco: Huarón, 14,000 ft., *Macbride & Featherstone 1149.*—Puno: Pr. Puno: km. 4 north of Puno on road to Juliaca, overlooking Puno, 3800 m., *Hutchison 1819;* Isla Amantani, 3950 m., *Aguilar.* Pr. Melgar: Chuquibambilla, *Stordy.* Pr. Sandia: Limbani, 2800 m., *Vargas 1308.* Tabina, Cordillera Oriental, *Lechler 2046a.*—Without definite locality: *Dombey 593.*

Páramos and punas, moist, grassy or dry, rocky slopes of the Andes, from Colombia to northern Argentina, at elevations of 2700 to 4800 meters in Ecuador and Peru, to as low as 1950 meters in the south. Attempts have been made to delimit several taxa from this highly variable complex, the nature of which has been graphically

presented by Mathias & Constance (l.c.) to indicate the apparently random distribution of variants. No striking indications of clear specific differences in the material have been seen in field studies. It is highly desirable that Peruvian collectors make field observations and collections in an endeavor to clarify the nature of the variability.

OSMORHIZA Raf.

Reference: Constance & Shan, The genus *Osmorhiza*, Univ. Calif. Publ. Bot. 23: 111–156. 1948.

Washingtonia Raf. Amer. Mo. Mag. 2: 176. 1818, nomen nudum. *Uraspermum* Nutt. Gen. 1: 192. 1818, not Scop. 1777.

Slender to rather stout, erect or decumbent at base, herbaceous, caulescent, branching, pubescent to glabrate perennials from thick fascicled roots. Leaves petiolate, membranaceous, ternate or ternate-pinnate, the leaflets lanceolate to orbicular, serrate to pinnatifid, with mucronate teeth or lobes. Petioles sheathing. Inflorescence of loose compound umbels; the peduncles terminal and lateral, usually exceeding the leaves. Involucre wanting, of a single foliaceous bract, or of several narrow foliaceous bracts. Rays few, slender, ascending to divaricate and reflexed, unequal. Involucel of several narrow foliaceous reflexed bractlets or wanting. Pedicels spreading to divaricate. Flowers white, purple, or greenish-yellow, the petals spatulate to obovate with a narrower inflexed apex; calyx teeth obsolete; styles slender to obsolete, their tips spreading or divaricate, the stylopodium conic. Carpophore 2-cleft less than half its length. Fruit linear to oblong, cylindric to clavate, obtuse, tapering, beaked or constricted at apex, rounded or caudate at base, compressed laterally, bristly-hispid to glabrous; ribs filiform, acute, often bristly; vittae obscure or wanting; seed subterete in transection, the face concave or sulcate.

A genus of some 11 species, widespread in woodlands in Asia and North America, with three species ranging into South America and one endemic there.

Osmorhiza mexicana Griseb. Abh. Ges. Wiss. Gött. 24: 147. 1879. *O. brevistylis* sensu Weddell, Hemsley, etc., not *O. brevistylis* DC. 1830. *Washingtonia mexicana* Rose, Contr. U. S. Nat. Herb. 8: 337. 1905.

Plants slender, 4–8 cm. high, hirsutulous throughout; leaf blades ovate-deltoid, 5–15 cm. long, ternate-pinnate, the leaflets ovate,

1.5–4 cm. long, 1.5–3.5 cm. broad, coarsely serrate, incised and pinnately lobed toward base, pilose especially beneath; petioles 8–20 cm. long; peduncles 7–14 cm. long; involucre wanting; rays 3–4, spreading-ascending, 25–75 mm. long; involucel of several linear, ciliate bractlets, 2–6 mm. long; pedicels spreading-ascending, 4–6 mm. long; flowers white or greenish-white, the styles and stylopodium 0.5–1.1 mm. long, the latter low-conic, the disc often conspicuous; carpophore cleft about one-fourth its length; fruit linear-oblong, 13–18 mm. long, tapering into a short beak at the apex, caudate at the base, the appendages 3–5 mm. long, bristly on ribs and densely so on appendages.

Illustrations: Coult. & Rose, Contr. U. S. Nat. Herb. 3: *pl. 10.* 1895.

Cusco: Pr. Quispicanchis: Disto. Marcapata between Cachupampa and Chile-chile, 3000 m., *Vargas 1352*, 2400–2600 m., *9697*. Pr. Urubamba: Ollantaitambo, *Cook & Gilbert 747*. Pr. Cusco: woods, Veronica, 3500 m., *Rauh & Hirsch 1026*.

To Chihuahua, Bolivia, and northwestern Argentina.

PARASELINUM Wolff

Erect, caulescent, sparingly branched, slightly scaberulous perennial herb from a fleshy root. Leaves petiolate, membranaceous, pinnately decompound, the ultimate divisions narrow. Petioles sheathing. Inflorescence of few compound umbels; peduncles terminal and lateral. Involucre conspicuous. Rays 10–12, stout, unequal, spreading-ascending to divaricate. Involucel of several narrowly linear bractlets. Pedicels stout, spreading-ascending. Flowers "white"; petals not seen; calyx lobes obsolete; styles rather short, divaricate, the stylopodium lacking. Carpophore parted to base, the two halves sharply diverging shortly below the apex. Fruit broadly ovoid, compressed dorsally, glabrous; ribs low and rounded, subequal; vittae solitary in the intervals, 2 on the commissure; seed slightly compressed dorsally in transection, the face plane.

A little known monotypic genus of the high Andes of Peru, habitally reminiscent of *Niphogeton*.

Paraselinum weberbaueri Wolff, Repert. Sp. Nov. 17: 174. 1921.

Plants caulescent to 40 cm. high, remotely branched, with few stem leaves; leaves pinnately compound, scaberulous, the leaflets

apiculate; upper leaves with petioles wholly sheathing, the segments linear; inflorescence scaberulous; peduncles to 13 cm. long; umbels about 10-rayed, the rays 1.2–4 cm. long; bractlets of involucel linear-filiform, shorter than pedicels; fertile pedicels about 5, to 4 mm. long; carpophore parted to base, fruit ovate, about 3.5 mm. long, 2–2.5 mm. broad, the stylopodium depressed.

Illustration: Math. & Const. Bull. Torrey Club 84: 194, *f. 4.* 1957.

Pasco: Cerro (Cordillera) Raura, chalk rocks, 4400 m., *Rauh & Hirsch 1832.*

The type of this species was collected by *Weberbauer (5471)* southwest of Ayacucho, near the Hacienda Totonabamba in a sparse woods near high shrubs and small trees, at 3500 meters. This specimen has not been seen and has probably been destroyed. The Rauh and Hirsch collection is a single, incomplete specimen, but it agrees closely with Wolff's description. Additional collections should be watched for.

PASTINACA L.

Tall, stout, erect, herbaceous, caulescent, glabrous to pubescent biennials or perennials, usually from taproots. Leaves petiolate, membranaceous, pinnately compound, the leaflets broad, serrate to pinnatifid. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and lateral. Involucre usually wanting. Rays rather few, spreading-ascending. Involucel usually wanting. Pedicels slender, spreading-ascending. Flowers yellow or red; petals oval with a narrower inflexed apex; calyx teeth minute or obsolete; styles short, spreading, the stylopodium depressed-conic. Carpophore 2-parted to the base. Fruit oval to obovate, strongly flattened dorsally, glabrous; dorsal ribs filiform, the lateral broadly thin-winged and nerved near the outer margins; vittae large, solitary in the intervals, 2–4 on the commissure, extending the full length of the carpel and not visible from the dorsal surface; seed flattened dorsally in transection, the face plane; strengthening cells in dorsal ribs and near outer wing-margins.

A genus of about 14 species, native of Eurasia. The cultivated parsnip has escaped from gardens and become naturalized locally in many parts of the world.

Pastinaca sativa L. Sp. Pl. 262. 1753. *Anethum pastinaca* Wibel, Prim. Pl. Werth. 195. 1799. *Peucedanum pastinaca* Baillon, Hist. Pl. 7: 96. 1879.

Plants to 1.3 m. high; leaves oblong to ovate, the blades 15–25 cm. long, 10–15 cm. broad, the leaflets oblong to ovate, 5–10 cm. long, 2.5–8 cm. broad, coarsely serrate and lobed or divided, puberulent or glabrate; petioles 1–14 cm. long; cauline leaves with conspicuously dilated sheaths; peduncles stout, 7–15 cm. long; rays 15–25, unequal, 2–10 cm. long; pedicels 5–10 mm. long; petals yellow; fruit 5–6 mm. long, 4–5 mm. broad.

Cusco: Pr. Paruro: alrededores de tierras de cultivo, Hda. Araypallpa, 3100 m., *Vargas 410*.

Europe. The cultivated parsnip, widely naturalized in the western hemisphere. Commonly known as *raccacha a birraca silvestre*.

PETROSELINUM Hoffm.

Slender, erect, herbaceous, caulescent, branching, glabrous biennials from taproots. Leaves petiolate, membranaceous, ternate-pinnately or pinnately decompound, the ultimate divisions ovate to linear, toothed or lobed. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and axillary. Involucre of a few inconspicuous bracts, or wanting. Rays few to numerous, spreading-ascending. Involucel of several linear bractlets shorter than the flowers. Pedicels numerous, spreading. Flowers yellow or greenish-yellow; petals obovate with a narrower inflexed apex; calyx teeth obsolete; styles short, spreading, the stylopodium low-conic. Carpophore 2-parted to the base or cleft to the middle. Fruit ovoid to oblong, compressed laterally, glabrous; ribs prominent, filiform; vittae solitary in the intervals, 2 on the commissure; seed subterete in transection, the face plane.

A Eurasian genus of 3 species, one of which, the cultivated parsley, has become widely naturalized throughout the world.

Petroselinum crispum (Mill.) Mansf. Repert. Sp. Nov. 46: 307. 1939. *Apium petroselinum* L. Sp. Pl. 264. 1753. *A. crispum* Mill. Gard. Dict. ed. 8. *Apium* no. 2. 1768. *Petroselinum hortense* Hoffm. Gen. Umbell. 163. 1814, nomen nudum. *P. sativum* Hoffm. op. cit. 177, nomen nudum. *P. vulgare* Lag. Amen. Nat. 2: 103. 1821. *Wydleria portoricensis* DC. Coll. Mém. 5: 36, *pl. 7*. 1829. *Carum petroselinum* Benth. & Hook. Gen. Pl. 1: 891. 1867. *Petroselinum petroselinum* Karst. Deutsch. Fl. 831. 1882.

Plants 3–13 dm. high; leaves deltoid, the ultimate divisions ovate-lanceolate to linear, 2–5 cm. long, 1–4 cm. broad, distinct,

petiolulate, toothed or lobed; petioles 1–2 dm. long; peduncles 3–8 cm. long; involucre of a few inconspicuous, entire bracts or wanting; involucel of 5–6 linear, acute, entire bractlets shorter than the flowers; rays 10–20, subequal to unequal, 1–5 cm. long; pedicels 2–5 mm. long; fruit ovoid-oblong, 2–4 mm. long, 1–3 mm. broad.

Junín: Pr. Tarma: Tarma, east-facing slope of hill immediately south of town, *Hutchison 1048*.—Lima: Pr. Lima: Ins. S. Lorenzo, Callao, *N. J. A. (ndersson?)*.

Central and northern Europe. The cultivated parsley, widely adventive in the western hemisphere.

RIDOLFIA Moris

Slender, erect, caulescent, branching, glabrous and glaucous, strong-scented annual, from a slender taproot. Leaves petiolate, membranaceous, pinnately decompound, the ultimate divisions filiform, the upper leaves often reduced to bladeless sheaths. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and lateral. Involucre wanting. Rays numerous, spreading-ascending. Involucel wanting. Pedicels slender, spreading-ascending. Flowers yellow; petals oval to obovate with a slightly inflexed, emarginate apex; calyx teeth obsolete; styles rather slender, divaricate, the stylopodium conical. Carpophore bifid. Fruit oblong-ovoid, compressed laterally, glabrous; ribs filiform, subequal; vittae solitary in the intervals, 2 on the commissure; seed subterete in transection, the face plane.

A monotypic genus of Mediterranean Europe, Asia, and Africa, the single species strongly resembling *Anethum* and *Foeniculum* in habit.

Ridolfia segetum (L.) Moris, Ind. Sem. Hort. Taur. 43. 1841; Fl. Sard. 2: 212, *pl. 75*. 1842. *Anethum segetum* L. Mant. 219. 1771, in part. *Foeniculum segetum* Presl, Fl. Sic. Prodr. 1: 26. 1826.

Plants 5–9 dm. high, the branches striate; leaves ovate, the blades about 2 dm. long, 2 dm. broad, pinnately decompound, the leaflets filiform to 4 cm. long; petioles 12 cm. long, sheathing below; upper leaves similar but reduced, the petioles wholly sheathing; inflorescence branching, the peduncles 3–8 cm. long; rays (10–) 20–35, spreading-ascending, subequal, 3–4.5 cm. long; fruiting pedicels about 20, strictly ascending, 5–8 mm. long, unequal; fruit 1.5–2 mm. long.

Illustrations: Reichenb. Ic. Fl. Germ. 21: *pl. 1932.* 1867. Hegi, Ill. Fl. Mitt.-Eur. 5 (2): 1162, *f. 2438.* 1926.

Huánuco: Pr. Huánuco: Huánuco, pasture, *Asplund 13466;* alturas de Santa Rosa, cerca a Huánuco, 1000 m., *Ridoutt.*

Introduced from southern Europe.

SANICULA L.

Reference: Shan & Constance, The genus *Sanicula* (Umbelliferae) in the Old World and the New, Univ. Calif. Publ. Bot. 25: 1–78. 1951.

Low, slender, erect or decumbent, herbaceous, scapose or branching, glabrous biennials or perennials. Plants arising from a short rootstock or directly from fusiform or tuberous roots. Leaves petiolate to subsessile, membranaceous to subcoriaceous, palmately or pinnately divided to decompound, the divisions variously toothed, lobed, pinnately dissected, or entire, the rachis naked or winged. Petioles sheathing. Stem usually branched, the branches variously arranged. Inflorescence of simple capitate umbels cymosely or racemosely arranged. Involucre of entire to lobed bracts longer or shorter than the umbels. Umbels polygamous, or unisexual with only staminate flowers. Flowers white, greenish-white, greenish-yellow, yellow, red, purple, blue, or violet, perfect or staminate, pedicellate or subsessile, the staminate flowers often prominently pedicellate, persistent or deciduous, the perfect flowers short-pedicellate or subsessile; calyx lobes setiform, linear-lanceolate, or obtusely ovate, nearly distinct to strongly connate, rostrate or concealed by the fruit armature when mature; petals spatulate to ovate, emarginate, and with a narrower, inflexed tip; styles shorter than calyx lobes or elongate, spreading, recurved, or coiled, the stylopodium lacking or flattened and disklike. Fruits oblong-ovoid to globose, somewhat compressed laterally, pedicellate or subsessile, densely covered with prickles, spicules, squamae, or tubercles, the prickles often dilated or bulbous at base, straight or uncinate; ribs obsolete; carpels subterete to laterally or dorsally compressed in transection; vittae large or small, regularly or irregularly arranged, 3 to many under dorsal and lateral surfaces, usually 2 on the commissure; seed face plane, concave, or sulcate; strengthening cells lacking.

A genus of about 40 species, occurring in temperate and subtropical zones throughout the world except for Australia and New Zealand.

Sanicula liberta Cham. & Schlecht. Linnaea 1: 353. 1826. *S. mexicana* DC. Prodr. 4: 85. 1830.

Plants slender, erect, 10–60 cm. high, the stem solitary, dichasially branched above; from a thick oblique to horizontal rootstock bearing elongated, thickened roots; basal leaves few to numerous, long-petiolate, orbicular-cordate to orbicular or pentagonal, 2.5–8 cm. long, 4–10 cm. broad, palmately 3–5-parted, the segments distinctly petiolulate, the median segments ovate-lanceolate to obovate-cuneate, acuminate, shallowly trilobed and irregularly incised, the lateral segments obliquely ovate or rhomboid-ovate, deeply bilobed, the margins simple or doubly crenate-serrate with spinulose teeth, the petiole much longer than the blade; cauline leaves reduced upward, short-petiolate to subsessile, similar to the basal; involucral bracts linear, acute, minute; umbels 8–15-flowered, the staminate flowers 5–12, their pedicels capillary, about 3 mm. long; calyx lobes narrowly lanceolate, acuminate, obviously connate at base; petals white to greenish-yellow; perfect flowers usually 3 (rarely solitary), short-pedicellate, their calyx lobes similar to those of staminate flowers, scarcely accrescent and not prominent in fruit, the styles twice as long as the calyx, divaricate; fruits generally 3, sometimes 1 or 2, distinctly pedicellate, subglobose, 2–4 mm. long and broad, covered with slender, uncinate prickles; carpels subterete in transection; seed face plane; vittae small, several on the dorsal and lateral surfaces, 2 on the commissure.

Illustration: Math. & Const. Fl. Panama 358, *f. 106*. 1959 (Ann. Mo. Bot. Gard. 46: 248).

Huánuco: Pr. Pachitea: Muña, 7000 ft., *Macbride 3994*. Pr. Huánuco: Cuchero, *Ruiz & Pavón*.—Junín: Pr. Jauja: Río Masamerich, entre el tambo Calabaza y la hacienda La Libertad, 1700–1800 m., *Weberbauer 6660*. Pr. Tarma: San Juan, cerca a Huacapistana, margen izquierda del Río Tarma, entre Tarma y San Ramón, 2200–2300 m., *Ferreyra 11315*.—San Martín: Pr. Moyobamba: Zepelacio, 1100–1200 m., *Klug 3345*. Pr. Lamas: San Roque, 1350–1500 m., *Williams 7036, 7130*.

Forest weed, to Chihuahua and Bolivia.

SPANANTHE Jacq.

Erect, herbaceous, caulescent, dichotomously branching, glabrous or pubescent annuals. Leaves petiolate, opposite, membranaceous, simple, crenate-dentate, palmately veined. Petioles with lacerate,

scarious sheaths, tufted at apex with setulose hairs. Inflorescence of loose, simple umbels. Peduncles paniculately arranged, axillary and terminal. Involucre of several small, narrow bracts. Pedicels slender, spreading-ascending. Flowers white or greenish-white; petals ovate to obovate, obtuse or acute, without an inflexed apex; calyx-teeth prominent; styles short, the stylopodium depressed-conic. Carpophore entire. Fruit ovoid, constricted at the commissure and flattened dorsally, glabrous; ribs filiform; vittae minute in the intervals or wanting; seed dorsally compressed in transection, the face plane.

A monotypic genus, weedy in tropical and subtropical areas, the West Indies, Mexico, and Central America to South America.

Leaves acuminate; pedicels 7–10 mm. long . *S. paniculata paniculata.*
Leaves acute; pedicels 2–5 mm. long; lomas . *S. paniculata peruviana.*

Spananthe paniculata Jacq. var. **paniculata** Jacq. Coll. 3: 247. 1789. *Huanaca spananthe* Vela in Lag. Amen. Nat. 1: 84. 1821. *Hydrocotyle spananthe* Willd. Sp. Pl. 1: 1363. 1798. *Spananthe setosa* Moench, Meth. Suppl. 34. 1802. *S. angulosa* Turcz. Bull. Soc. Nat. Mosc. 20 (1): 171. 1847.

Plants 2–15 dm. high; leaf blades 1.5–14 cm. long, 0.5–14 cm. broad, acuminate; petiole 0.7–14 cm. long; peduncles 0.7–14 cm. long, hirtellous-pubescent at the base of the umbel; involucre of several lanceolate, mostly entire bracts, 2–3 mm. long; pedicels several, spreading-ascending, 7–10 mm. long; fruit ovoid, 2–4 mm. long, about 2 mm. broad.

Illustrations: Jacq. Ic. Pl. Rar. 2: *pl. 350.* 1786–1793. Mart. Fl. Bras. 11 (1): *pl. 77.* 1879.

Ayacucho: Pr. La Mar: Aina, between Huanta and Río Apurimac, 750–1000 m., open woods, clearing, *Killip & Smith 22826.*—Cajamarca: Pr. Cajamarca: abajo de San Pablo, 2200–2400 m., *Weberbauer 3851.*—Cusco: Pr. Convención: Potrero, Garabito, 1350 m., *Vargas 7106, 1814.*—Huánuco: Pr. Huánuco: open humid wasteland, Pillao, 2700 m., *Woytkowski 34156;* moist slopes, Villcabamba, Hacienda on Río Chinchao, 6000 ft., *Macbride 4979.* Pr. Tingo María: weed, Tingo María, *Asplund 12433.* Pr. Pachitea: Muña, at sunny edge of montaña, 7000 ft., *Macbride 4002.* Sunny brook margin, María del Valle, 7000 ft., *Macbride 3561.*—La Libertad: Pr. Otuzco: Chual (Simbal-La Cuesta), 1150 m., *López 946.*—Lambayeque: Pr. Lambayeque: above Olmos, 700 m., *Weberbauer 7095.*

Weedy; the West Indies, central Mexico, and Central America to South America.

Spananthe paniculata Jacq. var. **peruviana** Wolff, Repert. Sp. Nov. 17: 176. 1921.

Plants 0.7–4 dm. high; leaf blades 1.2–3 cm. long, 1.5–4 cm. broad, acute, subcordate to truncate, dentate-crenate, sparingly setose on veins; petiole to 5 cm. long; peduncles 1–4.5 cm. long, 1–3 in the axils; involucre of several scarious linear-lanceolate bracts, shorter than the white flowers; pedicels 5–10, 2–5 mm. long; fruit truncate-ovoid, 2–2.5 mm. long, 0.5–2 mm. broad.

Arequipa: Pr. Islay: 8 km. north of Quebrada de Mollendo, 350 m., *Worth & Morrison 15749;* lomas de Mollendo, 100–300 m., *Vargas 8642;* Mollendo, *Hitchcock 22388.*—Ica: Pr. Pisco: Pisco Valley, 2500 m., *Rauh & Hirsch 395a.*—Lima: Pr. Lima: lomas de Atocongo, 300–400 m., *Ferreyra 2443, 4014, 12470;* 400–500 m., *Ferreyra 187, 11813;* rocks, 200–600 m. on hills south of Atocongo, *Pennell & Anderson 15947;* Atocongo, rocky limestone slopes, 250–500 m., *Pennell 14780;* lomas de Chotana, alrededores de Caracoles, carretera Lima-Cañete, 250–300 m., *Ferreyra 6286;* Dist. Pachacamac, Atocongo, 300 m., *Mexía 4049;* Amancaës, cerca a Lima, 300 m., *Maisch 152,* 150 m., *Soukup 2892;* Cerro Agustinos, *Soukup 2160;* Lurín, sandy lomas along the sea, 200 ft., *Macbride 5956,* 400–500 m., *Ferreyra 9588.* Pr. Chancay: lomas de Lachay, cerca a Chancay, *Ferreyra 3880,* 300–350 m., *Ferreyra 8749,* 500 m., *Velarde 2245,* 300–400 m., *Cerrate 857;* Huara, Hda. Desagrario, lecho de un río seco, *Goytigola.* Pr. Huarochirí: Matucana, 2400 m., *Weberbauer 5255,* steep shale rock slope, 8000 ft., *Macbride & Featherstone 107.* Pr. Cajatambo: Ambar, *Stork 11453.*

Lomas of Peru. Differs from variety *paniculata* in its smaller, acute, rather than acuminate leaves, fewer and shorter peduncles and smaller fruit.

TORILIS Adans.

Erect or decumbent, herbaceous, caulescent, branching, hispid or pubescent annuals; from slender taproots. Leaves petiolate, membranaceous, 1–2-pinnate or pinnately decompound, the leaflets narrow. Petioles sheathing. Inflorescence of capitate or loose compound umbels, the umbels lateral or terminal and lateral, sessile or pedunculate. Involucre of a few small bracts, or wanting. Rays

6–12, spreading-ascending, or obsolete. Involucel of several linear or filiform bractlets. Pedicels spreading, short or obsolete. Flowers white; petals obovate with a narrower inflexed apex; calyx teeth evident to obsolete; styles short, the stylopodium thick, conic. Carpophore bifid at apex or cleft ⅓–½ its length. Fruit ovoid or oblong, flattened laterally, tuberculate or prickly; primary ribs filiform, setulose, the lateral ribs displaced onto the commissural surface, the secondary hidden by the numerous glochidiate prickles or tubercles which occupy the entire interval; vittae solitary under the secondary ribs, 2 on the commissure; seed flattened dorsally in transection, the face concave to shallowly sulcate; strengthening cells present in the primary ribs, absent from the secondary.

A genus of about 20 species, native of the northern hemisphere. Several species widely scattered throughout the world as weeds.

Torilis nodosa (L.) Gaertn. Fruct. 1: 82. 1788. *Tordylium nodosum* L. Sp. Pl. 240. 1753. *Caucalis nodosa* Scop. Fl. Carn. ed. 2. 1. 192. 1772. *Caucalis nodiflora* Lam. Fl. Fr. 3: 424. 1778. *Anthriscus nodiflora* K.-Pol. Bull. Soc. Nat. Mosc. II, 29: 151. 1916.

Plants 0.9–6 dm. high, hispid throughout; leaves oblong, pinnately decompound, the leaflets filiform, 2–8 mm. long, 1–2 mm. broad, acute, entire or pinnately lobed; peduncles much shorter than leaves, 2.5 cm. long to obsolete; involucre absent or of an inconspicuous, linear bract; rays few, short to obsolete; involucel of linear, acute bractlets longer than pedicels; pedicels very short; fruit ovoid, 3–5 mm. long, 1–2 mm. broad, the outer carpels bristly, the inner merely warty, or sometimes only the outer part of the carpel bristly.

Illustrations: Cabrera, Man. Fl. Buenos Aires 347, *f. 128, A–D.* 1953.

Lima: Pr. Lima: vicinity of Lima, Amancaës, loma vegetation, *Asplund 13740.* Pr. Cañete: Mala, 200 m., *Velarde 106.* Pr. Chancay: lomas Cerro de Agua, 200–600 m., *Vargas 4712.*

Mediterranean region, adventive in the warmer areas of the western hemisphere.

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